ENGINEERING NEWS-RECORD

The Seabees still pass muster p.30

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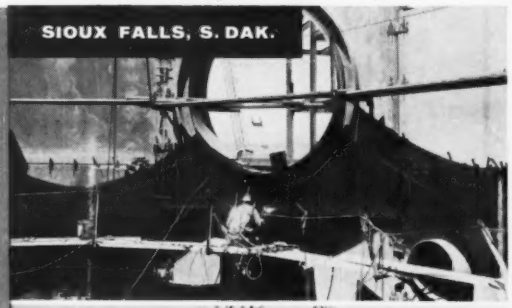

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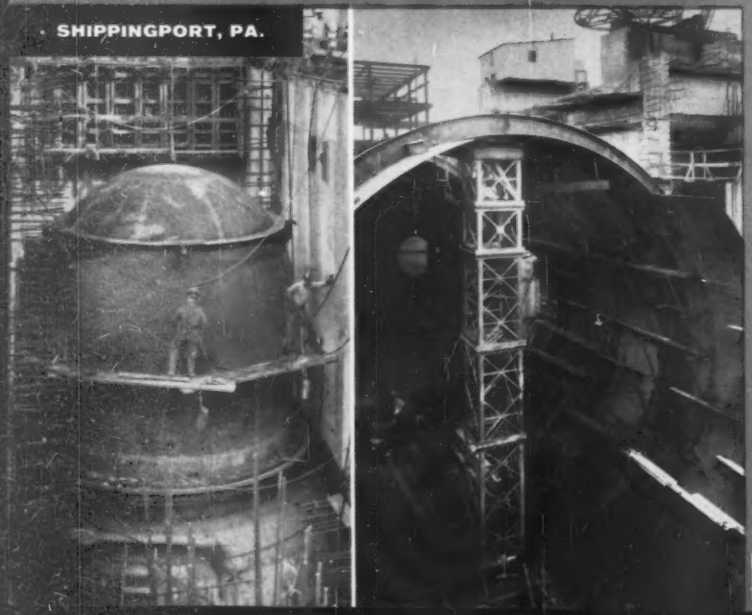

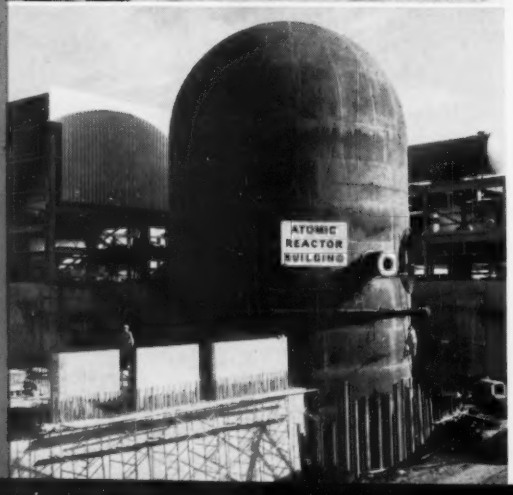

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9 Twin Bridges

Symons Steel-Ply Forms Lick Tight Schedule

. . . Forms Set Horizontally and Stripped in Sections

Eight months to build the piers and substructure for nine twin highway bridges. Moore Brothers Construction Co., Verona, Virginia had this tight schedule to meet . . . and made it. Figuring concrete formwork correctly was an important factor in meeting the schedule.

The bridges are part of the 28-mile superhighway that connects the new Dulles International Airport at Chantilly, Va., with Washington, D.C.

On this project, the forms were assembled, stripped and moved easily by

Symons Forms are easily moved from completed pier (right) to new pier at left. Symons scaffold brackets aided materially in setting up forms.

manpower so that the forms could be reassembled on a second pier while the first was being stripped. Concrete was poured at the rate of about 3 feet an hour with each pier poured in a continuous operation.

The complete *Chantilly story* sent *free* on request. Symons Steel-Ply Forms are rented with purchase option.

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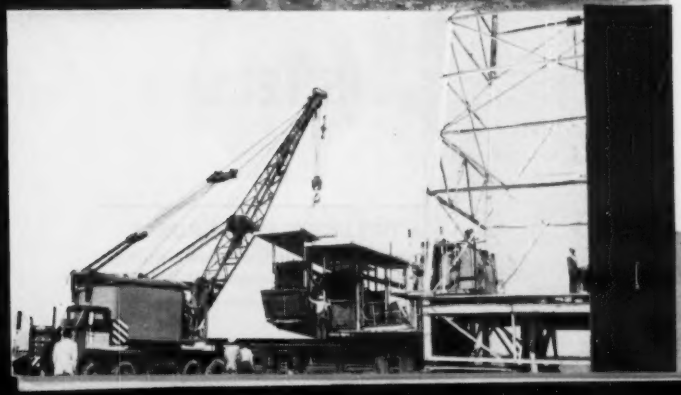
Did you say, "HANDLING LOADS"?



HERE'S a page of Northwest Truck Cranes on heavy duty work. From the 102 in., 14-ton section of pipe above to the 32,000 lb. oil field engine and compound at the bottom of the page—these are typical of the kind of jobs that Northwest Truck Cranes are on.

Northwest Truck Cranes bring you smoothness of performance in handling bulky, heavy loads or spotting high lifts with long booms. The Feather-Touch Clutch Control gives you the true "feel" of the load when easing a giant pipe into the ditch or in spotting highly stressed concrete beams. Uniform Pressure Swing Clutches give you smooth engagement and cool running, free from jerks and grabs that set a boom to jumping.

The Northwest Independent High Speed Boom Hoist operates without sacrificing either main drum and independently of all other operations. It operates under power *both up and down.*

Northwest Truck Cranes bring you Power Load Lowering, Sectional Boom Hoist Rigging and Pendant Lines, Telescopic Boom Struts, Folding Gantries, Adjustable Jibs, Removable Counterweight, 3rd Drums, Open Throat Booms and a host of advanced carrier features combine to get your job done quickly and profitably. Don't buy a Truck Crane without getting the full story.

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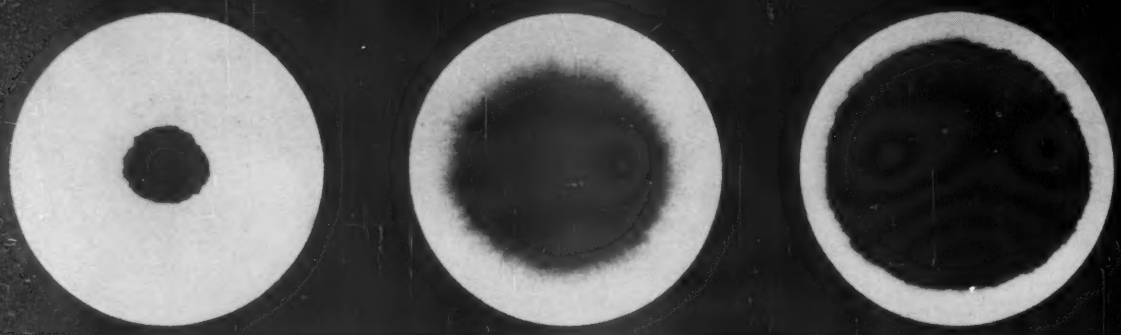


3 drops of oil—3 conditions. First oil doesn't spread and has lost dispersancy. Second oil spreads into paper, has good dispersancy. Third spot indicates good dispersancy, but high soot level. Shell "Oilprint" Analysis can give you advance warning of engine trouble.

BULLETIN:

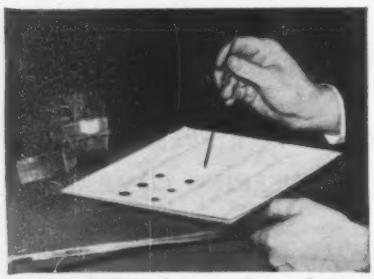
Shell 5-minute "Oilprint" Analysis shows what's going on inside your engines; now used by over 500 fleet operators

Now, with Shell's ADC® "Oilprint" Analysis, you can test used engine oils in your own shop. And in a matter of minutes.

Read how this unique testing process can give you advance warning of engine trouble, help you set up more effective maintenance schedules and reduce roadside breakdowns.

A DROP of oil from an engine is an excellent indicator of the lubricant's condition and—to the experienced eye—of the engine's condition.

It can tell you if the oil is still satisfactory for continued service. It can provide clues to faulty carburetion. It can show a coolant leak. It can help you schedule proper oil drain intervals. And much more.



"Oilprint" Analysis can be made in your own shop.

How do you get this information quickly?

Over 500 fleet operators have found the answer in Shell's 5-minute "Oilprint" Analysis.

All that's needed: Shell's ADC "Oilprint" Analysis Chart and a warmed-up engine.

A few drops tell the story

Take the problem of sludge accumulation.

If the oil makes a dark concentrated spot, it has lost its ability to hold sludge particles in suspension. Poor dispersancy, our technical people call it. The oil should be changed.

By adding Shell Indicator Fluid, a Shell Representative can tell if the oil still has its anti-wear properties. In Shell's Motor Oils for fleet use, these properties guard against engine wear.

You can also determine the relative amount of soot and contaminants—such as wear debris and dust that might foul your engine. If there's a water leak or anti-freeze contamination, proper evaluation of an oilprint will reveal it.

Free Demonstration

Your Shell Industrial Products Representative will gladly give you a free demonstration of the Shell ADC "Oilprint" Analysis. He will show you how to set up a "life cycle" report of every engine you operate. Call him today.

SHELL

A BULLETIN FROM SHELL
—where 1,997 scientists are helping to provide better products for industry.

False economies are often the most expensive !

It is poor economy to save a few dollars by buying inferior sewer pipe. The cost of the pipe itself is perhaps one-sixth of the complete sewer installation cost. If for any reason the pipe must be repaired or replaced, costs skyrocket. You have the enormous expense of tearing up the pavement, maintaining sewage flow during reconstruction and replacing the pavement. And, you must buy new pipe. You can avoid trouble by choosing the right pipe in the first place. Why accept the risk of a substitute, when you can have the real thing? There is only one pipe you know will endure: vitrified clay pipe. Amvit Jointed Clay Pipe is strong and rigid, can't sag or bend. The plastic joint, like the pipe, is acid resistant. And, roots cannot enter this tight compression joint. Acid-laden, high temperature sewage, discharged from washing machines and garbage disposal units will not bother Amvit Jointed Clay Pipe in any way. Neither will the abrasive action of sand or gravel. For more information on how Amvit can help cut sewer project costs, write or call American Vitrified Products Company, National City Bank Building, Cleveland, Ohio, or our office nearest you.

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Restricted site problem solved with **REINFORCED CONCRETE**

A country club on one side . . . a river on the other . . . restricted the construction site for this interchange bridge in Trinidad, Colorado. To overcome this problem, Ken R. White, Inc., Consulting Engineers, designed for reinforced concrete. A closed abutment frame was used to eliminate the need for approach spans. If you have a design or construction problem, you too may be able to solve it more readily with reinforced concrete. On your next project, investigate this versatile, low-cost, timesaving construction material.

Concrete Reinforcing Steel Institute
38 South Dearborn Street, Chicago 3, Illinois

Interchange Bridge over Interstate Rt. 25, Trinidad, Colorado
Owner: Colorado Department of Highways
Designers: Ken R. White, Consulting Engineers, Denver
Contractor: Dominic Leone, Trinidad, Colorado

3-61

GPX® HIGH DENSITY overlaid plywood does job of pre-stressed concrete steel forms at lower cost; vibrated 6,000 rpm

High density overlaid plywood was used by the Washington State Highway Department to cast ninety-foot, pre-stressed concrete beams for a bridge in western Washington. Forms were vibrated 3,000 to 6,000 rpm, and stripped in 24 hours. Results? Strong, smooth concrete beams at lower form-cost. And with forms in good condition, ready to be used again or cut to any size required for the next job.

Here's concrete proof that GPX High Density will give you a form that is strong and durable - yet low cost.

It's adaptable to many sizes and shapes . . . and produces a smoother surface, strips faster, and lasts longer than ordinary plywood. Its life is limited only by the number of cuts, or care in handling. Order GPX High Density in all standard sizes, or custom sizes.

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Please send sample of GPX High Density, with detailed information and nearest local source.

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Reader Comment

Importance of Size and Scale

SIR—Apparently the superstructure constitutes the greatest design problem and chief reason for the delay in completion of the "Big Ear" radio telescope (ENR Nov. 3, 1960, p. 19). The designers admitted to an error in the preliminary estimated weight of the structure. This can happen to anybody, but it is not usually a reason for great delay in the working schedule. This makes me suspect that the error is essentially one of poor initial design.

Probably the designers underestimated the influence of the size of the structure, adopting a solution that can be used well for radio telescopes of about 30 to 100 ft diameter. Underestimating weight is typical of this type of error.

In a well-designed structure we can approximately recognize the size, because it is one of the essential factors that influences design, e.g., the Golden Gate Bridge is a structure where at once we recognize that the span can be 2,000 or 4,000 ft long, but not 100 ft.

The tendency to increase the size of a structure beyond its practical limits has a long history in our civilization, e.g. Cathedral of Chartres collapsing during construction because it was too big for a Gothic type structure. In legendary times, the Tower of Babel collapsed apparently for the same reason.

I am not suggesting that the radio telescope under construction is running to the same destiny, but I believe that the reason for the trouble and probably further delay in completion is essentially the same.

This is not a routine job; it requires a different type of structure from that usually employed in radio telescopes of small diameter.

In my opinion it is possible to redesign the structural part of the radio telescope in about a year, and for it to be erected in another year. That means during 1963.

Structures out of scale are extremely expensive, and the reason is disproportionate increase of dead load.

JOHN J. HEMPEL, A.M. ASCE
Roselle Park, New Jersey

For Your Calendar . . .

American Railway Engineering Association, annual meeting, McCormick Place, Chicago, March 7-9. Write: N. D. Howard, Secretary, 59 E. Van Buren St., Chicago 5, Ill.

Steel Founders' Society of America, annual meeting, Drake Hotel, Chicago, Ill., March 13-14. Write: George K. Dreher, Steel Founders' Society of America, 606 Terminal Tower, Cleveland, Ohio.

Mississippi Valley Conference of State Highway Officials, annual meeting, Edgewater Beach Hotel, Chicago, March 16-18. Write: E. S. Peterson, Director, Ohio Department of Highways, Columbus, Ohio.

Contracting Plasterers and Lathers International Association, Southwest conference, Roosevelt Hotel, New Orleans, March 17-19. Write: CPLIA Southwest Conference, Roosevelt Hotel, 123 Baronne St., New Orleans, La.

12th Western Metal Congress, Western Metal Exposition, American Society for Metals, Ambassador Hotel and Pan-Pacific Auditorium, San Francisco, Calif., March 20-24. Write: James C. Nelson, American Society for Metals, Metals Park (Novelty) Ohio.

American Society of Photogrammetry, annual congress on surveying and mapping, Shoreham Hotel, Washington, D. C., March 22-25. Write: Charles W. Culkin, 403 Orleans Circle, S. W., Vienna, Va.

Symposium on Ground Water Contamination, U. S. Public Health Service, Sheraton-Gibson Hotel, Cincinnati, Ohio, April 5-7. Write: Director, DHEW, PHS, Robert A. Taft Sanitary Engineering Center, 4676 Columbia Parkway, Cincinnati 26, Ohio.

Southern Municipal and Industrial Waste Conference, Duke University, Durham, N. C., April 6-7. Write: Edward H. Bryan, Duke University, College of Engineering, Durham, N. C.

American Industrial Hygiene Conference, Sheraton-Cadillac Hotel, Detroit, Mich., April 9-13. Write: American Industrial Hygiene Association, 14125 Prevost, Detroit 27, Mich.

American Society of Civil Engineers, Phoenix convention, Hotel Westward Ho, Phoenix, Ariz., April 10-14. Write: William H. Wisely, Exec. Sec., 33 W. 39th St., New York 18, N. Y.

American Welding Society, annual meeting and welding show, Commodore Hotel and the New York Coliseum, New York City, April 17-21. Write: Arthur L. Phillips, 33 W. 39th St., New York 18, N. Y.

Western Association of State Highway Officials, annual conference, Flamingo Hotel, Las Vegas, Nev., April 23-28. Write: C. S. Elche, Reservations Chairman, State Highway Office Building, Carson City, Nev.

16th Purdue Industrial Waste Conference, Purdue Memorial Center, May 2-4. Write: Don E. Bloodgood, Chairman of Conference, Purdue University, School of Civil Engineering, Lafayette, Ind.

Building Research Institute, spring conference, Shoreham Hotel, Washington, D. C., May 16-18. Write: Building Research Institute, 2101 Constitution Ave., Washington 25, D. C.

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Plaza Apartment Bldg. No. 30, St. Louis
Plaza Apartment Bldg. No. 40, St. Louis
Plaza Apartment Bldg. No. 50, St. Louis
Plaza Apartment Bldg. No. 60, St. Louis
1221 Minor Building, Seattle
Manhattan Bldg., Seattle
Logan Bldg., Seattle
Mark 51 Bldg., Seattle
Carlton House, Shaker Heights, Ohio
Broadway & Austin Bldg., San Antonio
215 N. Flores Bldg., San Antonio
Bayview Office Bldg. Addn., Ft. Lauderdale
Versailles Apartments, Ft. Lauderdale, Fla.
Birch Towers, Ft. Lauderdale
Breakwater Towers, Ft. Lauderdale
Massachusetts Blue Cross, Boston
Crimson Associates Bldg., Cambridge, Mass.
Babson Bldg., Boston
University Towers, New Haven
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Grain Dealers Mutual Ins. Co., Indianapolis
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Pacific Fidelity Life Insurance, Los Angeles
Ohio River Vista Apartments, Cincinnati
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College Terrace, Brooklyn
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National Study of 101 new Buildings reveals definite superiority of Structural Steel

Impartially selected, 43 of the studied buildings are framed in structural steel, 58 are reinforced with steel

Here are the results . . .

Speed— Buildings framed in structural steel went up 45% faster. From ground breaking to occupancy, buildings framed in structural steel progressed at the rate of 123,241* cu. ft. per month, compared with 85,240* cu. ft. per month for structures reinforced with steel. (Structural steel's greater speed was substantial regardless of project size.)

Cost— Almost identical, regardless of framing material. Buildings framed in structural steel averaged $1.54 per cu. ft., compared with $1.48 per cu. ft. for buildings reinforced with steel, an apparent 4% premium for structural steel. However, steel-framed buildings were 95.6% air-conditioned, as against 78.1% for steel-reinforced buildings. With air conditioning amounting to an average of 6% of total building cost today, simple calculation reduces the differential to 2.9%, which is offset by the revenue produced by earlier occupancy of steel-framed structures. (Average annual rental rate for these buildings was $3.88 per sq. ft.)

Conclusions? Draw your own.

Study Specifications:

All building foundations were begun after Jan. 1, 1958. All buildings were occupied before Nov. 30, 1960. Buildings ranged in height from 4 to 21 stories. (59 from 4 to 9 stories, 29 from 10 to 15 stories and 13 from 16 to 21 stories.) Office and apartment buildings, selected at random and located in all parts of the country, were studied by impartial construction survey specialists. None of the projects involved abnormal delays beyond the control of the contractor.

For more details on this study, write to American Bridge Division, U. S. Steel, Room 1801M, 525 William Penn Place, Pittsburgh 30, Pa.

*Applies to total construction time, not simply frame.

USS **American Bridge Division of United States Steel**

"Rock is nothing new for this TD-25"

Contractor Preston Cottrell, Kalispell, Montana, owns this International TD-25 that's roughing out a mountain logging truck haul road on swampy, rocky, machine-mauling terrain. The TD-25's operator, William Clark, comments: "This '25' worked in rock all summer—works well in rock; has got lots of 'soup.' And it's got the special advantage of having the power on both tracks all the time." Owner Cottrell adds: "Best of all tractors I've ever used for road-building."

How Owners rate Planet-powered "25's" COMPARED TO THE CRAWLERS THEY REPLACED!

"TD-25 outworks any rig of its size we've used"

"Our TD-25 does more work in a day than any competitive tractor its size we've ever used," reports Gen. Supt. G. H. Crouch, for W. Owen Flowe & Son's contracting firm, Charlotte, No. Carolina. "Live track steering and over-all balance enabled the TD-25 operator to grade within .02% of the 24-degree, 1,000-foot long track slopes—within four hours. A motor grader would have taken two days to do this same job. TD-25 live track Planet Power-steering gives accurate load control with no side slip." Here, TD-25 is digging out a 20-ton boulder—a step in building the huge new Charlotte motor speedway racing track.

"TD-25 Planetary steering benches rock in 2nd gear"

"Planet Power-steering makes the TD-25 especially good for benching and bank-cutting—and it really takes the passes of rock in second gear (where 1st gear is usual with clutch-steered rigs)," states Kinney Hamm, for Albert Brothers Contractors, Roanoke, Va. "I can operate the '25' with my little finger, and with confidence." This Albert Brothers' TD-25 is blading huge loads of shot rock aside on a hilltop cut of an Interstate Project near Buchanan, Va.

"Better pusher control on all terrain"

"TD-25 planetary steering gives the operator better pusher control of the scraper load in all types of terrain conditions," states Grady B. Stancil, Stancil Bros. Construction Co., Snellville, Ga. "TD-25 has no match for work on grades as it will back up slopes and maneuver." View shows Stancil TD-25 pushing an International Payscraper on state highway job near Lawrenceville, Ga.

"Our TD-25's save time and dynamite in rock"

"The road-building capacity of our TD-25's is something you must see to believe," declares Contractor Russell Train, Myrtle Point, Oregon. "They cut the roads out faster—save time and the cost of dynamite ripping through rock strata we always had to blast before." Here's one of owner Train's TD-25's benching out type EE Forest Service roads that will be rock-coated for all-weather use.

See how "live track" TD-25 Planet Power-steering gives you full-power momentum—and eliminates load-limiting "dead-track drag." Try on-the-go, Hi-Lo power-shifting that ends "gear-shift lag." Compare how this power-steering, power-shifting combination teams with 230 work-slugging turbocharged Diesel hp—to outwork king-sized clutch-steered crawlers job after job! Let your International Construction Equipment Distributor demonstrate the TD-25!

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CF&I — a nationwide steel company — provides many different steel products for all types of construction, including sports stadiums like the one shown above.

CF&I Prestressed Concrete Strand and Wire **(A)** give the necessary tensile strength to precast concrete beams used in the grandstands of the stadium. These lightweight beams are also widely used in the underground parking area and the ramps leading to the stadium.

CF&I-Wickwire Wire Rope **(B)** could be used to support the transparent plastic roof which folds like an accordian at the arch. For more standard construction uses, CF&I's premium wire rope, Double Gray®-X, gives extra-long life because its wires are protected by a molecular shield of molybdenum disulphide. And *CF&I-Wickwire Wire Rope Slings* **(C)** are selected for safe, dependable hoisting.

CF&I Grader Blades and Cutting Edges **(D)** change hard, rocky ground into smooth roadbeds. *CF&I-Welded Wire Fabric* **(E)** provides steel reinforcement for concrete in main highways, access roads, parking areas and tilt-up constructions, giving them longer life and smoother surfaces. *CF&I Rebars* **(F)** strengthen the concrete columns which support the ramps leading to one of the

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Thousands of pounds of *CF&I Nails* (**I**) are used for wooden scaffolding and concrete forms, while much of the gravel and aggregate is sized on *CF&I Industrial Screens* (**J**). And *CF&I-Wickwire Automotive Springs* (**K**) are extensively used in trucks and service vehicles.

More and more contractors now realize that a domestic steel company—like CF&I—is best equipped to supply them with dependable steel products and expert on-the-job technical assistance. For complete details, contact a nearby CF&I office or write for Catalog G-104 "CF&I Steel Products for the Construction Industry."

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ENGINEERING NEWS-RECORD

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THE CONSTRUCTION WEEK

BUSINESS IS BUILDING—Industrial building contracts to date in '61 are up 37% over last year's relatively low pace, and commercial building has gained 27% over the year ago figure, which was fairly strong. But mass housing volume continues down—off 12% from the '60 pace.

BRIDGE OVER THE TAGUS—United States Steel Corp. has signed a $60-million contract with the government of Portugal to build a suspension bridge over the Tagus River at Lisbon. The bridge will have a center span of 3,318 ft and end spans of 1,540 ft, making it the longest suspension bridge in Europe, fifth longest in the world. Designers are Steinman, Boynton, Gronquist & London of New York, and Tudor Engineering Co. of San Francisco. Construction will take four years.

STABLE PRICES, HIGHER PRODUCTION—Those are the two essentials for the nation's economic progress, said Secretary of Commerce Luther H. Hodges at the 42nd annual convention of the Associated General Contractors in Boston this week. He urged construction management to rededicate itself to the national interest. AGC's labor committee is working this week on a new plan for settling disputes. It will take the form of an agreement for settling disputes other than jurisdictional ones. For the full convention story, see ENR next week.

TRINITY DAM CLEARANCE SALE—If you're in the market for used heavy construction equipment, there's a wide selection in a Redding, Calif., yard where most of the equipment used on Trinity Dam is marshalled for public sale. The millions of dollars worth of equipment varies from run-of-job 'dozers to a complete conveyor system two miles long. For details, contact Trinity Dam Contractors, 10 West Orange Ave., South San Francisco.

CHICAGO WATER HIKE—A 6-cent-per-1,000-gal raise will send Chicago's basic water rate to 22 cents about May 1. The extra money will be used partly to help finance the city's $104-million, five-year capital-improvement program.

EGG IN THEIR CHAMPAGNE—Although the $2.5-million subway that will carry 100 senators the 1,800-ft between the Capitol and the New Senate Office Building isn't even finished (ENR Feb. 2, p. 130), some senators are finding fault with it. Sen. Carl Curtis (R., Neb.) thinks the lemon yellow tiles that line the tunnel aren't beautiful enough. He's introduced a bill to have the walls of the subway hung with oil paintings of scenic spots and historic events of the various states.

GRIFFIN **Solves Another Dewatering Problem!** To build 11 double piers for the Chicago-to-St. Paul Expressway Bridge over the fast-flowing Wisconsin River, contractor procedure called for constructing three earth cofferdams in the coarse sand, gravel and boulders of the river . . . Typical of construction speed was the progress made in only 10 weeks in the cofferdam shown above: • Construct cofferdam—2 weeks • Install Wellpoint system and dewater to grade—one week • Excavate, drive piles and pour concrete up to river level—7 weeks.

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WASHINGTON OBSERVER

- Housing on the New Frontier
- Faster pay for base builders
- Green Bank 'scope is in trouble

● **The New Frontier is putting its stamp on housing.** Homebuilding is in the doldrums. And the President's housing experts are planning to re-shape housing programs across the board to fit what they see as the needs of the next four or five years.

The Administration has already taken steps to make mortgage credit easier and terms more liberal—and there will be more to come. There's doubt, though, that the Administration would back proposals to underwrite no-down-payments and 40-year maturities on houses up to $15,000.

The problem plaguing the planners is that they see a relatively soft housing outlook compared to the kind of market that sustained the industry during the postwar years. With the wartime backlog of demand finally gone, the simple easing of terms may not do the job.

So there will be an increasing emphasis on special programs for special markets. These include housing for the elderly, college housing, rental housing, nursing homes, public housing, and, (particularly) urban renewal.

Practically all these programs need new money or new authority to make loans and grants. And both the Administration and congressional leadership are pushing for an omnibus bill before Congress goes home.

Fannie Mae will be used to boost special markets—for example, by being directed to buy at par mortgages on low-income housing and the like.

The proposed new Department of Housing and Urban Affairs will not include much more than housing, at least at the outset. The plan now is to create the department through legislation, rather than through the presidential power of reorganization, which had been favored previously.

● **Quicker payments to contractors on missile-base work can be expected soon.** Air Force Undersecretary Joseph V. Charyk told a House appropriations subcommittee that Air Force agencies have been instructed to expedite procedures to assure prompt payment of contractors.

The immediate effect will be on the upcoming Minuteman projects. But help also is expected for Atlas and Titan base contractors. Many of them testified that they were badly hurt by "change orders" and other delays—to such an extent that their working capital was depleted. Some subcontractors, they said, were pushed to the brink of bankruptcy.

A shift to cost-type contracts also was promised by the Air Force. Most of the contractors agreed that a shift to a cost-plus-fixed-fee type of contract is desirable. Mr. Charyk confirmed that the Air Force is considering a fixed-price, incentive-fee type of contract. The subject also was thrashed out at a meeting of the nation's major contractors in Boston this week.

● **Construction problems have forced a three-year delay in the building of a 140-ft radio telescope** for the National Science Foundation at Green Bank, W. Va. Costs now are estimated at nearly $9 million, compared to the original estimate of slightly more than $5 million. (Don't confuse this with the 600-ft 'scope under construction at nearby Sugar Grove, W. Va. That one has also run into trouble, ENR Nov. 3, 1960, p. 19.)

Fabrication problems and methods of erecting large sections of the facility have been chief cause of the delay. NSF has called in a special consulting team—headed by Augustus B. Kinsel, research vice president of Union Carbide—to seek a new construction approach. A new contract also is being negotiated with the E. W. Bliss Co. of Canton, Ohio.

Light & Power Utilities' new 112,000-sq.-ft. quarters in quality Stran-Steel were built under Mississippi's "Balance Agriculture with Industry" Program. Architects: Lee, Brumfield and Riggens, Jackson, Miss.; Stran-Steel Contractor: Dixie Metal Buildings Co., Memphis.

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JFK Charts Water Development

- **"No new starts" policy to end, and needed flood control, reclamation and power projects would be begun as soon as possible.**
- **Long-range planning for development of water resources will be made a White House responsibility.**
- **Continual appraisal of needs and programs will be made by economic advisers and a presidential advisory committee.**
- **Comprehensive development plan by 1970 is the goal for every major river basin where plan does not already exist.**

Better long-range planning for development of the nation's water and other natural resources is the goal of a program laid out by President Kennedy last week. The program constitutes a flat reversal of the "no new starts" policy on water and reclamation projects and calls for immediate spending increases for control of water pollution and development of saline water conversion.

Mr. Kennedy said the "no new starts" policy "took a heavy toll in added costs and even human life and homes by postponing essential flood-control projects." He directed the Budget Bureau to schedule a program of new projects to make up the lag—"taking into account the availability of funds."

No price tag can be placed on the President's program yet. But officials guess it would swell the budget for the next fiscal year by $150 million to $200 million, mostly in sewerage-aid increases and additional new starts on water and reclamation projects.

• **Permanent resources committee**—The President served notice that he is "reclaiming" for the "Executive Office" the responsibilities for long-range planning and coordination of national policy on conservation and development of natural resources.

He declared that he will shortly issue executive orders or directives:

• "Authorizing a strengthened Council of Economic Advisers to report to the President, the Congress and the public on the status of resource programs in relation to national needs."

• Establishing under the Council "a presidential advisory committee on natural resources, representing the federal agencies concerned in this area and seeking the advice of experts outside of government."

• Instructing the Budget Director, in consultation with the departments and agencies concerned, "to re-evaluate current standards for appraising the feasibility of water-resource projects."

The President's recommendations follow generally those laid down in January by the Kennedy-Johnson Natural Resources Advisory Committee in its report to the incoming Administration.

• **Pollution control**—To step up water pollution control, President Kennedy urged Congress to increase federal grants for construction of sewage treatment plants and other anti-pollution facilities. A bill by Sen. Robert Kerr (D., Okla.) would increase the current $50 million a year to $75 million; one by Rep. John Blatnik (D., Minn.) calls for $125 million. Mr. Kennedy would reportedly be happy with a compromise at $100 million. President Eisenhower vetoed $90 million last year.

Another move would upgrade water and air pollution at the bureaucratic level to give it more attention as a problem separate from general health problems. Mr. Kennedy called for a "special unit" in the Public Health Service to handle pollution. Mr. Blatnik, the key congressman on pollution problems, would like to remove pollution from the Public Health Service altogether and administer it primarily as a resource problem in a separate agency.

A Blatnik proposal now under study by Administration leaders would create a pollution control agency at the same level in the Health, Education and Welfare Department as that of the PHS (ENR Feb. 16, p. 23). Mr. Blatnik would settle, however, for upgrading it from division to bureau status if it were not tied in with other "environmental health" problems such as radiation. The nature of the proposed change will be worked out by Administration and legislative leaders.

The President estimated the cost of air pollution at $7.5 million a year in damage to vegetation, livestock, metals and other materials, not including health considerations. He will spell out later a program for "effective federal air pollution control." The federal role is now largely one of research.

The President also proposed stronger enforcement procedures in pollution abatement situations of national significance; intensified and broadened research into pollution sources, effects and abatement methods; increased federal financial aid for operation of state and interstate water pollution control agencies.

• **Salt water conversion**—Mr. Kennedy called for a two-fold increase in federal spending on saline water development—to about $4 million a year. He regards this area as a prime one for a real breakthrough that would "bring new hope" to underdeveloped nations as well as relief for some of this country's water problems.

"No water resources program is of greater long-range importance," the President declared, "than our efforts to find an effective and economical way to convert water from the world's greatest, cheapest natural resources—our oceans—into water fit for consumption in the home and by industry."

He pledged that when the know-how

. . . Water supply to get federal attention too

is achieved, it will immediately be made available to any country that wants it, along with the assistance needed to use it.

• **Water supply**—Demand for water in the U. S., Mr. Kennedy says will jump from 300 billion to 600 billion gallons a day in the next 20 years for all purposes. "If all areas of the country are to enjoy a balanced growth, our federal reclamation and other water resource programs will have to give increased attention to municipal and industrial water and power supplies as well as irrigation and land redemption," the President stated. "I am so instructing the Secretary of the Interior, in cooperation with the Secretary of Agriculture and the Secretary of the Army," he declared.

• **Basin planning**—Mr. Kennedy praised the "very excellent and timely report" recently completed by the Senate Select Committee on National Water Resources (ENR Feb. 2, p. 21). He said his Administration accepts the goal recommended by the committee of developing comprehensive river basin plans by 1970, in cooperation with the individual states. He also proposed legislation setting aside potential sites for reservoirs; and immediate Senate approval of a treaty with Canada on cooperative development of the Columbia River Basin.

"I urge the Congress to authorize the establishment of planning commissions for all major river basins where adequate coordinated plans are not already in existence," he said.

A major reason for the planning, the President said, is to identify sites for future reservoirs. The advantage of the planning would be partly dissipated however, he said, if the sites were not kept free of extensive residential and commercial development that would apply pressure against later construction of the reservoirs.

Mr. Kennedy called the full water and power potentials of the Columbia Basin "a vision that must be fulfilled." He urged the Senate to approve the Columbia River Joint Development Treaty (ENR Jan. 26, p. 29) "to permit an immediate start on the immense efforts that can be jointly undertaken in power production and river control in that basin."

• **Power**—The Administration is taking a strong stand for development of public and private power to meet an expected tripled demand in the U. S. by 1980.

"Hydroelectric sites remaining in this country will be utilized and hydroelectric power will be incorporated in all multiple-purpose river projects where optimum economic use of the water justifies such action," the President said.

"Expansion of this nation's power facilities will require intensive efforts by all segments of our power industry," he declared. "Sustained heavy expansion by all power suppliers—public, cooperative and private — is clearly needed," Mr. Kennedy asserted.

"The role of the federal government in supplying an important segment of this power is now long established and must continue," he said.

Mr. Kennedy also said efforts to develop competitive nuclear power in areas of high-cost fossil fuels will be encouraged by Atomic Energy Commission programs in cooperation with industry.

The President promised that in selling power, the federal government will give preferential treatment to municipal power systems and cooperatives.

• **Flood control** — Programs will be speeded as rapidly as fiscal and technical capabilities permit, the President stated. He said he has asked all federal agencies concerned to help the states with flood data and in efforts to regulate and rezone flood plains.

Agencies concerned with urban redevelopment, including the Housing and Home Finance Agency and the Bureau of Public Roads, have been instructed to coordinate their activities with the flood-control agencies to make sure flood-control information is used to advantage.

Current floods in many areas of the Southeast and East grimly underlined the flood-control aspects of the President's message.

• **Other natural resources**—The President touched in a general way on other natural resources. He called for accelerated forest development; fuller planning for use of public lands in grazing, forestry, recreation and mineral exploitation; and a faster pace in installing water and soil conservation works on public lands.

He stressed the importance of untapped mineral resources of the oceans and indicated that "increased efforts under federal leadership" will be necessary to rehabilitate depleted fish populations in both marine and inland waters.

The President pledged the "concerted attention" of his Administration to "our whole national effort in the basic and applied research of oceanography."

Back on the local level . . .

Factories Join in Pollution Control

Three neighboring industrial plants in Oklahoma have joined forces in a $500,000 program to build a waste treatment system that will handle the combined waste from their plants.

John Deere Chemical Co., National Gypsum Co., and Bestwall Products Co. formed the Pryor Industrial Conservation Co., all in the town of Pryor, which will build 4.5 miles of pipeline and two sewage lagoons.

The three plants presently discharge nearly 75 million gallons of waste each month into a small creek that runs dry periodically. During these dry periods the wastes accumulate in the creek bed. Then when heavy rains do occur the concentrated waste is sluiced from the creek into the Grand River causing excessive pollution and fish kills.

When the new system is complete, waste from the three plants will drain to a 176-acre lagoon and be retained for 45 days. At the end of this period, effluent will drain to a smaller 49-acre pond for a 35-day retention. BOD and ammonia are expected to be reduced 50% by this treatment and the final effluent will be piped directly to the Grand River, thus avoiding any discharge into the creek.

John Deere makes nitrogen fertilizer. Its 4.5 million gallons per month of waste contains 6,000 lb per day of ammonia. Bestwall produces paper backing for wallboard from modified waste paper. This process involves a 50-million-gallon-per-month discharge of waste containing 7,800 lb per day of five-day BOD. National Gypsum, manufacturing the same material as Bestwall, discharges 20 million gallons per month, contributing an additional 2,200 lb per day of five-day BOD.

The John Deere engineering department is handling design of the project. Jess Dew, chief engineer for Deere, says this particular waste combination has never been treated in a lagoon, hence holding levels and maximum storage volumes will have to be determined after the lagoons are in operation.

Although local sportsmen have complained periodically, the abatement program was undertaken entirely on the initiative of the three firms after several years of study.

ACI Seeks Concrete Improvements

- **Concrete men told that water-cement ratio alone is not adequate for proportioning concrete mix.**
- **Specification of minimum strength is uneconomic.**
- **For fire protection, prestressed and reinforced concrete need different cover for same rating.**

Minimum strength specifications and the water cement ratio "law" were put under the microscope and found to contain flaws at the 57th annual convention of the American Concrete Institute in St. Louis last week.

These two subjects were among those that sparked the most discussion on a program that contained 25 papers and more than a dozen committee reports.

• **Beware the "law"**—Too much concrete is still being made on the assumption that the ratio of the water and cement is the sole determinant of concrete strength, according to Prof. H. J. Gilkey of Iowa State University. Acknowleding that the water-cement ratio is unexcelled for simplicity and dependability as the dominant design criterion for workable mixtures that have been developed by the trial-batch method, Professor Gilkey warned that it nevertheless is a generalization and not a "law."

The size, shape, surface texture and grading of the aggregates are quite as important as the relative amounts of water and cement. Actually, many different strengths can be obtained from the same water-cement ratio. All concrete experts know this. But there is a danger that the knowledge is not shared by enough ordinary concrete producers. Because of this, Professor Gilkey urges that the wording of the familiar water-cement vs strength pronouncement should be revised to read as follows:

"For a given cement and acceptable aggregate, the strength that may be developed by a workable mixture of cement, aggregate and water (under the same mixing, curing, and testing conditions) is influenced by: (a) the ratio of cement to mixing water; (b) the ratio of cement to aggregate; (c) the grading, surface texture and stiffness of the aggregate; and (d) the maximum size of the aggregate."

• **Minimum strength specs**—The widely used specification that says that "the concrete shall have a compressive strength at 28 days of 3,000 psi," or any other designated minimum strength, is unrealistic, obscures the true factor of safety and raises costs. This was the challenging contention of Edward A. Abdun-Nur, consulting engineer of Denver. He urged that a requirement admitting the probability that 10 to 20% of the strengths given by sample test cylinders would be below the design strength would be more realistic and result in more uniform and less costly concrete.

Adhering to a rigid minimum strength requirement, he said, results in keeping all strengths far above what the designer actually needs. If the contractor attempts to hew too closely to the minimum value, some batches test low, and the concrete must be rejected or even cut out. This is unnecessarily expensive.

What is required, Mr. Abdun-Nur said, is to shift from the individual batch or test to a basis of average performance. This would give the designer the strength that he requires. It would also put the contractor and ready-mix producer on the side of the designer, since they would attempt to iron out glaring irregularities even before the inspector found them to assure that their average strength would be acceptable.

They would voluntarily be seeking uniformity in their product, which is what the designer really wants. They would do this, said Mr. Abdun-Nur, because it would be readily obtainable, and would decrease their costs and thus increase their profits.

• **Fire and prestressed concrete**—The fire resistance requirements of prestressed concrete are not the same as those for reinforced concrete because the steel tendons are cold-worked steel, which is permanently damaged by too much heat, and because the concrete is of much higher strength, and therefore spalling damage may be more serious.

Prof. G. E. Troxell of the University of California reviewed the existing data on fire tests of prestressed concrete—most of which come from Europe—and presented some guide lines for specifications. In the first place, he noted, prestressed concrete has some advantages as well as disadvantages in resisting fire. Its tendons are located at varying distances from the surface, and some of them, therefore, are well protected. Also, when large tendons are used, they have greater heat carrying capacity and therefore greater fire resistance. Nevertheless, greater cover is required than for reinforced concrete. And this cover should be greater for beams than for slabs, since heat can penetrate from both sides and the bottom of a beam and usually only from the bottom or top of a slab.

Tests indicate that for four-hour fire exposure prestressed beams should be given a 4-in. cover and prestressed slabs a 2.5-in. cover. When the cover is greater than 2.5 in., a light reinforcement should be used to keep the concrete in place around the tendons. And this reinforcement should have a 1-in. cover. A cover of lightweight concrete has been shown to be 20% more effective than the same thickness of hard rock concrete.

• **Tuthill is new president**—Lewis H. Tuthill, concrete engineer of the California Division of Water Resources was elected president of ACI to succeed Prof. Joe W. Kelly of the University of California (see p. 42). Other honors at the convention went to Treval C. Powers, research counselor of the Portland Cement Association, who was elected to honorary membership; and to Stanton Walker, director of engineering of the National Sand and Gravel Association, and the Ready Mixed Concrete Association, who received the Henry C. Turner Medal for outstanding "achievements in and contributions to" the concrete art.

A. Allan Bates, vice president for research and development of the Portland Cement Association, received the Henry L. Kennedy Award for "technical and administrative services to the ACI." He was chairman of the committee that guided the development of the new headquarters building for the institute in Detroit. The building has been hailed as an architectural masterpiece in concrete.

The Alfred E. Lindau Award for "outstanding contributions to concrete design" went to Anton Tedesko, vice president of Roberts & Schaefer Co. for his numerous contributions to the development of thin-shell concrete arches.

The Leonard C. Wason Medal for noteworthy research was awarded to Henry T. Toennies for his paper, "Artificial Carbonation of Concrete Masonry Units." And the Leonard C. Wason Medal for the Most Meritorious Paper went to Robert A. Williamson for an article entitled, "Performance and Design of Special Purpose Blast Resistant Structures."

JFK tells Congress: No stretchout, no cutback . . .

Full Speed Ahead on the Highway

President Kennedy this week committed his Administration to completion of the Interstate Highway Program in 1972 as scheduled. He told Congress he was "wholly opposed to either stretching out or cutting back" the roadbuilding program.

In a special message to Congress, Mr. Kennedy called for user-tax increases to provide the estimated $9.7 billion in new revenue required to keep construction going at the pace originally contemplated. Unless the extra funds are provided, the President warned, it will be necessary to stretch the program out five more years.

At the same time, Mr. Kennedy asked Congress to authorize a "small but significant increase" in primary, secondary and urban (ABC) construction funds. He proposed that the annual expenditure level of $925 million be increased by $25 million every two years, beginning in 1964, until a $1-billion level can be maintained.

He told Congress:

- If necessary, he will order further accelerations in the availability of federal-aid highway funds as an anti-recession measure. He recently made available immediately the allotment of aid that would not otherwise have been released until April. In addition he said he may ask for federal aid to speed road repairs in areas of substantial unemployment, particularly those hit by harsh winter weather.
- He is ordering a better effort on the part of the federal government to improve coordination in federally supported urban renewal programs and construction of urban expressways. He has instructed the Secretary of Commerce and the Housing and Home Finance Administrator to spur cooperation between federal, state and local highway and housing officials and private experts.
- He wants the federal law providing incentives to states to control billboards along the Interstate system for four years. The law now is scheduled to expire June 30. In addition, he proposed that the incentive be increased from one-half to 1% of a state's allotment of federal aid. And if this proves insufficient to promote billboard control, he said it may be necessary to adopt more direct controls or "at least charge billboard owners for benefits they receive" from the highway system.
- He would like to see the Highway Act amended to provide federal assurances that families displaced by highway construction will receive help in finding adequate new housing at reasonable costs. He said that poorer families displaced by highways, particularly freeways in congested areas, often have a difficult time finding new housing and are forced to move into slums.

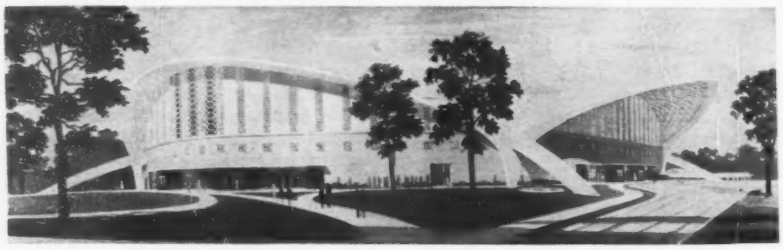
Mr. Kennedy said completion of the 41,000-mile network is essential to the national defense, to saving American lives that would otherwise be lost in highway accidents, and to advancing the nation's economy. He said the program not only provides a stimulus to employment and such industries as steel, concrete and road machinery, but will play a vital role in developing new industrial complexes and urban areas.

But without added revenues of approximately $900 million a year through 1972, the Interstate system is "in peril," the President warned.

To raise the revenue necessary to keep the program on a pay-as-you-go basis, the President urged Congress to vote taxes with two principal features:

- Keeping federal motor fuel tax at four cents a gallon instead of letting it drop to three cents as scheduled, June 30.
- Imposing new taxes that would fall mainly on heavy-duty trucks that use diesel fuel and weigh more than 26,000 lb when loaded. The new taxes, however, would go on all tires running on highways, including passenger tires.

Mr. Kennedy's proposals are certain



Nearly two acres of column-free area will be spanned by a . . .

Skewed-Arch Roof for Coliseum

A $3-million coliseum for the University of Georgia will feature an unusual system of precast and cast-in-place concrete roof construction. The double-curved roof will be supported on two intersecting concrete arches.

The main arches, in conjunction with four edge ribs, will support intersecting precast ribbed deck panels.

Springing from points located outside four corner columns, the main arches will trace parabolic curves of 380-ft span diagonally across the building. The arches vary in depth from 4 ft at the crown to 9 ft at the columns.

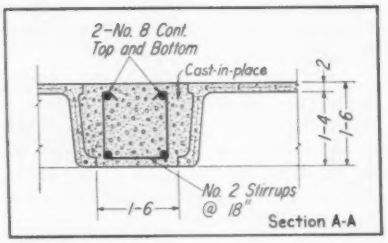
The roof will cantilever beyond each side of a 270-ft square defined by the four columns.

Hundreds of precast units, shaped like triangular pans, will form the roof deck and skewed-arch framing spanning between the main arches. The three tapered sides of these units will serve as forms for the sides of cast-in-place ribs, roughly 24 in. wide by 18 in. deep.

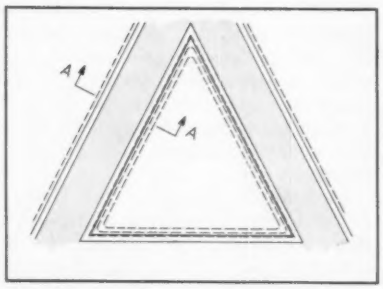
Top surface of each precast unit is a triangular area of 8-ft base and 8-ft altitude. Concrete between ribs is 2 in. thick. The ribs will intersect the main arches near mid-depth.

Architects are Cooper, Barrett, Skinner, Woodbury & Cooper, Inc. Structural engineers are Chastain & Tindel, Inc. Both firms are from Atlanta.

The plans should be issued for bids by June 1.



PRECAST UNITS, triangular pans 8 ft on a side, form deck between ribs.



SKEWED RIBS are cast between sides of adjacent precast units.

Program

to raise a storm of protest from automobile and highway-user groups, the commercial trucking and petroleum industries and tire manufacturers.

Mr. Kennedy rejected a number of alternative proposals advanced by various groups for raising the additional revenue. He said he did not favor abandoning the pay-as-you-go method of financing, or increasing the states' share of roadbuilding costs (the ratio is now 90-10 with the federal government paying the bigger share), or issuing special federal highway bonds or putting additional tax burdens on those who do not use, but nevertheless benefit from, the highway program. He also said the answer does not lie in "charging tolls on roads that ought to be free."

Instead, Mr. Kennedy proposed more than trebling the tax on trucks weighing over 26,000 lb—from $1.50 per 1,000 lb to $5.00—and nearly doubling the tax on diesel fuel—from four cents a gallon to seven cents. In addition, he would increase the tax on tires from eight to 10 cents, on inner tubes from nine to 10 cents and on tread rubber from three to 10 cents.

He said numerous federal and state studies of benefits derived by trucks from new highways and of the construction "extras" they require conclude that heavy motor vehicles should pay more of the highway program's cost.

"Indeed," he said, "technical experts in the Bureau of Public Roads advise me that even the (proposed) increase would not charge heavy trucks their fair share . . ."

Mr. Kennedy noted that the size and weight of tractor-trailer combinations require thicker highway surfaces, wider pavements and shoulders, more careful grading and more expensive bridges. Yet in terms of ton-miles traveled, these heavy vehicles are the primary beneficiaries of the system. They gain from the use of less gas and oil, less depreciation, less driver strain, fewer accidents, shorter distances and travel time.

The President acknowledged that the Bureau of Public Roads' recent highway cost allocation study said that 8% of the Interstate program's benefits accrued to so-called non-users. He said this part of the study was open to serious challenge.

But aside from that, he added, the Highway Trust Fund already receives nearly $60 million from non-users (vehicles not driven on highways, motor boats and the like) and at the same time is not charged with $140 million worth of other road programs benefiting users but charged to the general treasury.

Around the World . . .

• **EJC expands**—The American Society for Testing Materials has been elected to affiliate membership in Engineers' Joint Council. The 20-year-old EJC now embraces 22 engineering organizations—10 constituent societies, three associates and nine affiliates.

• **Try, try again**—California will make a second stab at starting a 1,500-ft-span suspension bridge across the main channel of Los Angeles Harbor. The Division of Highways will open bids March 22 for the substructure contract. Last year, low bids totaling $14.1 million were rejected because there were no buyers for the construction bonds.

• **Money in the bank**—Architects and engineers have specified the new A36 structural steel for 25 projects currently in the design stage, according to the American Institute of Steel Construction. Steel weight savings in A36 range up to 10% of equivalent designs in A7 steel. Cost savings are almost as great.

• **Pennsylvania road plans**—The Pennsylvania Department of Highways will commit at least $235 million in construction contracts for the Interstate highway system in the state and $132 million for primary and urban highway systems during the next two years.

• **Rapid transit progress**—Directors of the Bay Area Rapid Transit District approved a $1-billion plan for 119 miles of high-speed rapid transit facilities for five counties in the San Francisco area. Residents will vote on the proposal in June, 1962.

• **Fire rating set**—Prestressed concrete twin T's have been given a two-hour fire resistance rating by the Underwriters' Laboratories. Design limitations permit the use of almost every prestressed concrete twin T and channel section available in the U. S. Basis for the rating was a series of fire tests sponsored by the prestressed Concrete Institute.

• **High-strength joist spec**—A new specification governing the design, materials, handling and erection of high-strength steel joists made from cold-rollformed sections can be obtained from the Cold Rollformed Structural Framing Institute, P. O. Box 830, Canton 1, Ohio.

• **The plane in Spain**—The Ministry of Aviation in Madrid asks interested companies to apply for information on an airport improvement program that will include Barajas Airport, Madrid; Prat Airport, Barcelona; Gando Airport, Canary Islands; and airports at Palma de Majorca and Malaga.

• **Dues raise?**—Members of the American Institute of Architects are being asked to vote at the April convention in Philadelphia for a dues increase. All firms—partnerships and corporations—having owners, partners or officers who are corporate members of AIA will have to pay annual supplemental dues based on their payroll.

• **All aluminum**—An office building in Los Angeles and a $250,000 house in Los Angeles will have aluminum structural framing as well as partitions and wall panels. Aluminum trusses for the one-story office building will span above the roof, suspending aluminum beams and roof-deck below.

• **Counseling in Caracas**—Three transportation experts, one from Sweden, one from France and one from the U. S., are in Venezuela to help plan a comprehensive traffic and public transport program of Caracas. The American is Edwin Clark, Director of Highway Transportation Studies for the New York Department of Public Works.

• **Turnpike sues**—The Pennsylvania Turnpike Commission is suing three insurance companies for $6.5 million on performance bonds posted for construction of the northeast extension of the turnpike. The suit charges that Manu-Mine Research and Development Corp., Reading, holder of the contract to flush and fill mine voids in the roadway to prevent collapse, failed to "perform its obligation of its contract."

• **Architectural competition**—The Pan American Health Organization is holding an international architectural competition to select a design for a new headquarters building in Washington, D. C. Any Western Hemisphere architect can enter the competition. For more information write to Leon Chatelain Jr., 1632 K Street N. W., Washington 6, D. C.

Quid Pro Quo?

Florida probe hears of sub-standard road work

Two days of conflicting testimony before a Florida legislative committee last week brought to light additional allegations of contractor payola to State Road Department employees and sworn testimony regarding sub-standard work on major highway projects in the Miami area.

William P. Ringo, general manager and vice president of H. C. Nutting Co., consulting engineers, swore that faulty work will shorten the life of Miami's $30-million Palmetto Expressway. Mr. Ringo asserted: "It is clearly evident that specifications were not met" on that project and the repairing of NW 54th Street in Miami.

On the expressway project, base density was reported to be below specifications in seven locations pointed out by informants. Of 23 tests at random locations, sub-par density was discovered at 14. Pavement thickness was deficient at 10 of 21 locations tipped by former employees and at three of ten spots picked at random.

Alleged payola included liquor, cash, entertainment, a garden light, fishing rods and reels. Several road department employees and contractors were involved.

Most of the alleged individual payoffs were on a small scale. Biggest items revealed in the testimony were $100 Christmas gifts in 1957 from E. C. Stockton Co. of Miami to Winston Carlton, State Road Department district engineer, and his assistant, Frederic E. Cullum.

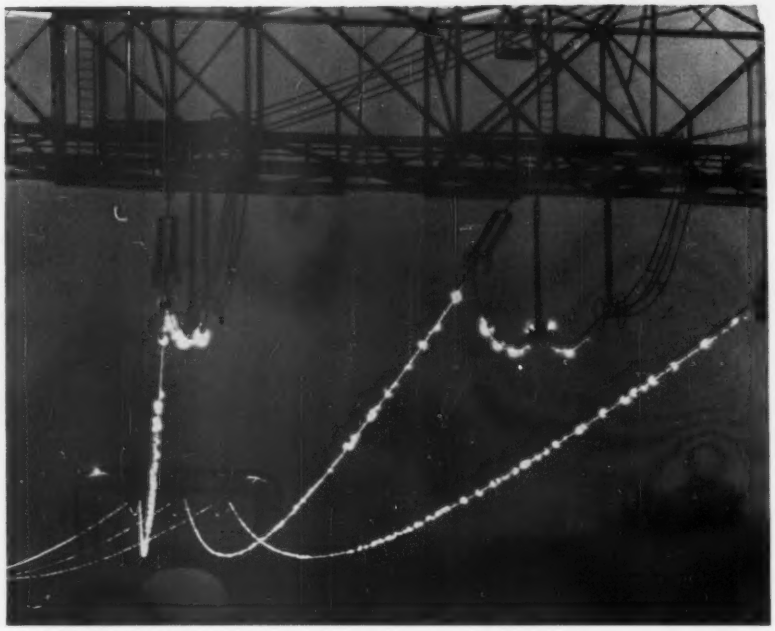
Al Church, state highway engineer, was asked why he testified in Washington two months ago that he knew of no instance of payola to road department engineers (ENR Dec. 15, 1960, p. 25).

Mr. Church had just finished testifying about the transfer of a bridge engineer who had admitted receiving $20 a week from Powell Brothers, Fort Lauderdale contractors. The state highway engineer told his questioner that it was the best of his recollection at the time and that he later had been reminded of the incident.

Looking back over the two days of testimony, State Senator Scott Kelly, chairman of the committee, said he was satisfied a system of collusion existed between roadbuilders and State Road Department employees.

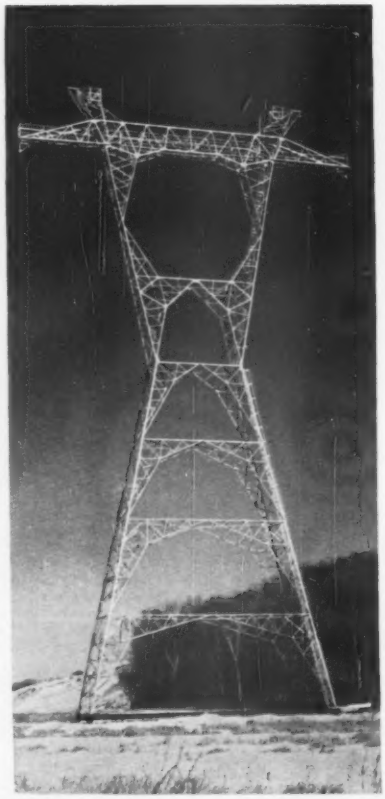
The Road Board chairman John Phillips after the hearings, "Somebody is lying and when I know who they are, they will be fired."

Gov. Farris Bryant says the guilty contractors may be forced to reimburse the state for faulty work.



CORONA GLOW from 720-kw load rings conductors under portal tower of experimental line. Dome beyond houses 3-million-volt impulse generator.

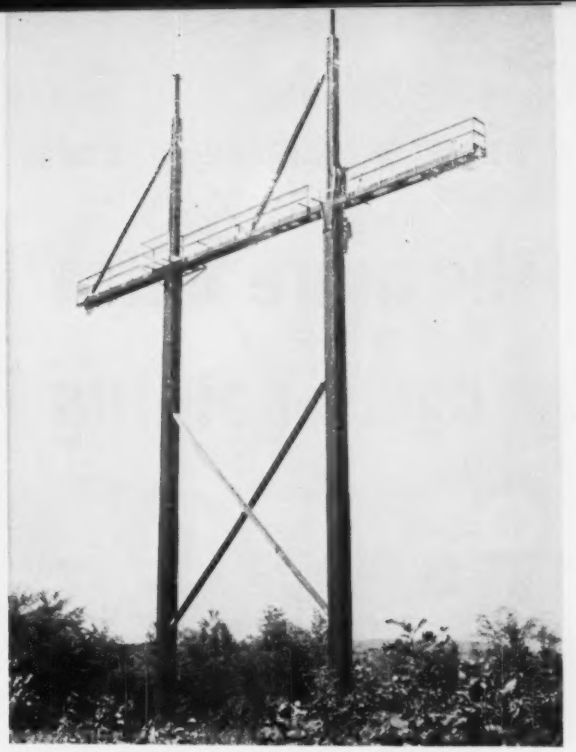
Extra High Voltage



STEEL tower—tallest at 123 ft—is designed with many light members.

ALUMINUM tower stands 105 ft high but weighs only 7 tons with all hardware.

PRESTRESSED CONCRETE tower's reinforcing cuts radio noise and corona tendency, but needs ties to ground system.



GLULAM WOOD tower provides economical design. Longest member is 98 ft. Tower weighs 26 tons, stands 123 ft high.

Produces New Tower Designs

Engineers are testing structures, equipment and conductor arrangement for high voltage transmission at up to 750,000 volts on the first section of a 4.3-mile experimental line in Western Massachusetts. The 7.5-million experiment, conducted by the General Electric Co. with more than 28 producers and designers, is producing the largest variety of tower structures—and new tower designs—ever erected in one project.

The first section of line, two-thirds of a mile long, carries conductors through three steel-framed portal towers designed as an outdoor lab for conductor arrangement. Power up to 750 kv has been on this section since last December. The second section, extending nearly four miles through Lenox and Lee, Mass., will test different types of towers for economy of design construction and for efficiency in handling extra high voltages.

There will be 18 towers in all when the line is completed next summer. Of these, one will be glulam timber and one prestressed concrete. Aluminum accounts for two others. The rest are framed in steel.

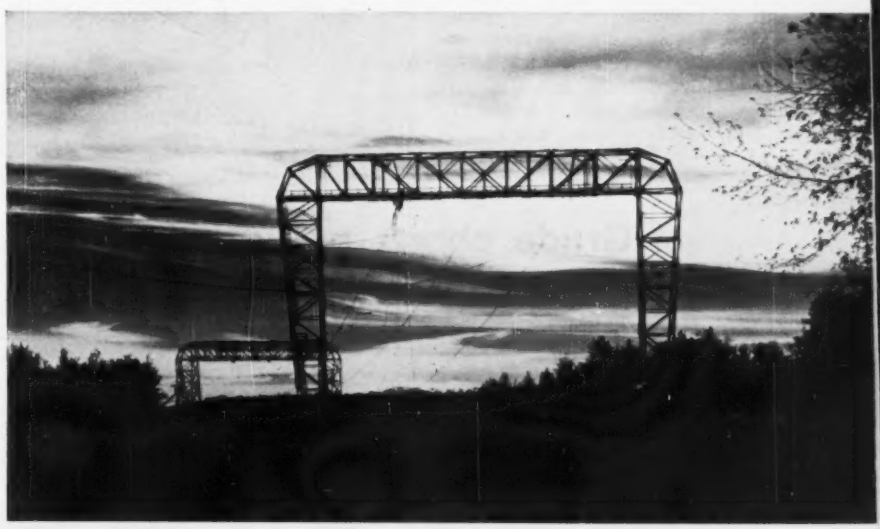
The glulam tower is formed by 98-ft-long H-section columns with lighter H-sections as upper legs. Crossarms, 94 ft long, are continuous 7 x 13 in. parallel members spaced 15 in. apart.

Hollow members, 18 x 36 in. with a 5-in. wall, make up the prestressed concrete tower columns and the crossarm. Braces are four 12 x 12-in. solid sections pin-jointed at the columns and made continuous by welding and grouting at the cross joint.

The first aluminum tower is 6061-T6 alloy with 2024-T4 alloy bolts for higher shear strength. Corner posts and compression sections of the crossarm are formed by Y-shaped members.

The second aluminum tower is a guyed-V structure. At 106 ft it's reported to be the largest of its type. But it weighs only 4,900 lb, making it the lightest tower in the line.

The steel towers—all of different design—include one A242 steel structure. The others contain about 75% A7 and 25% A440 steel. Two are galvanized. All field connections for the towers are bolted.



PORTAL TOWERS rest in loose sand but explosive compacting eliminated piles. For expected settlement, 134-ton towers sit on 4½-in.-dia steel pins.

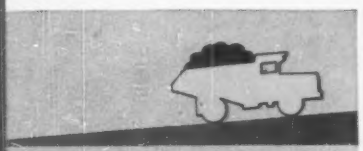
THE STEEPER THE GRADE...

the more "extra" loads a cycle-gaining Payhauler® gives you

Of all three 27-ton off-road haulers, only the International 95 Payhauler gives you the weight-shedding, strength-multiplying advantages of the rock-ribbed, corrugated body. Only the "95" is plus-powered by the 375-hp DT-817 turbocharged Diesel. And only the "95" gives you an exclusive combination of power-control, safety, and comfort features that turns haul-speed advantages into extra haul-cycles! *Prove to yourself* what comparative grade charts and work-tally sheets show! See your International Construction Equipment Distributor for a Payhauler demonstration!

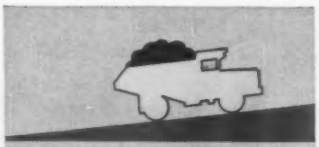
Positive Torqmatic braking gives the operator complete control of this fully-loaded "95"—builds confidence to use the highest practical haul speeds, even when hauling down the steepest grades. "One-hand" power-steering teams with finger-tip brake lever control to give course-holding, grade-matching downgrade hauling stability. Torqmatic braking, standard equipment on the power-shift "95," is a Payhauler *plus*—furnished in addition to the standard, internal-expanding wheel brakes—to help give you "*extra*" loads on tough hauls!

Grade charts prove: only the 95 Payhauler delivers



Total grade and rolling resistance, 10%

Hauler	Hauling Speed (mph)	Payhauler Advantage
95 Payhauler	10.2	
Competitor X	8.0	27.5%
Competitor Y	8.0	27.5%



Total grade and rolling resistance, 11%

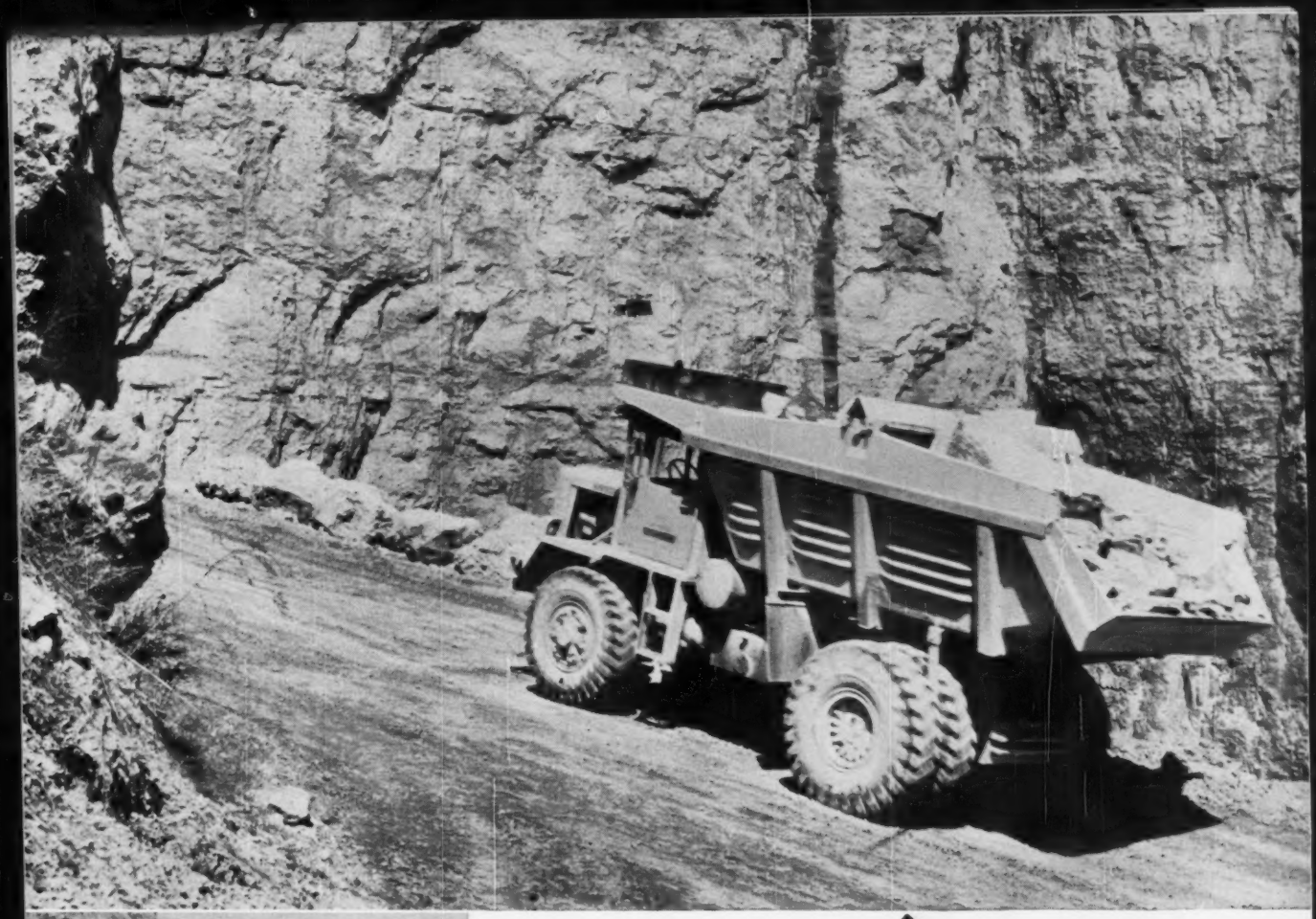
Hauler	Hauling Speed (mph)	Payhauler Advantage
95 Payhauler	10.1	
Competitor X	7.0	44.3%
Competitor Y	7.5	34.7%

Total grade and rolling resistance, 12%

Hauler	Hauling Speed (mph)	Payhauler Advantage
95 Payhauler	9.0	
Competitor X	6.3	42.9%
Competitor Y	7.0	28.6%

Total grade and rolling resistance, 13%

Hauler	Hauling Speed (mph)	Payhauler Advantage
95 Payhauler	7.9	
Competitor X	5.5	43.6%
Competitor Y	6.0	31.7%



Two 65 Payhauler rigs speed full 19-ton loads of dolomite from quarry to crusher—up a maximum climb-out grade of 16%. Powered by the 250-hp naturally aspirated "817" Diesel—equipped with weight-shedding corrugated steel body—the "65" consistently hauls 30% faster than competitive rigs! Price the "65"—you pay less per hp, less per struck yard and per ton of capacity than for competitive rigs!

Three 95 Payhauler trucks replace five competitive haulers in a large Chicago-area quarry. Reasons: fully-loaded "95's" haul upgrade as much as 44% faster than the competitive make—give fast, "big-target" loading—dump in only 11 seconds with exclusive power-up and power-down hoist action. And the cycle-gaining "95's" with Torqmatic power-braking, power-steering and power-shifting deliver "extra" loads on steep hauls!

International Harvester Co.
180 North Michigan Ave.
Chicago 1, Illinois

A COMPLETE POWER PACKAGE

International® Construction Equipment

"extra" loads . . . over any 27-ton competitor

Total grade and rolling resistance, 14%

Hauler	Hauling Speed (mph)	Payhauler Advantage
95 Payhauler	7.2	
Competitor X	5.0	44. %
Competitor Y	5.5	30.9%

Total grade and rolling resistance, 15%

Hauler	Hauling Speed (mph)	Payhauler Advantage
95 Payhauler	6.4	
Competitor X	4.8	33.3%
Competitor Y	5.3	20.8%

Total grade and rolling resistance, 16%

Hauler	Hauling Speed (mph)	Payhauler Advantage
95 Payhauler	5.8	
Competitor X	4.6	26.1%
Competitor Y	5.0	16. %

Total grade and rolling resistance, 17%

Hauler	Hauling Speed (mph)	Payhauler Advantage
95 Payhauler	5.4	
Competitor X	4.5	20. %
Competitor Y	4.9	10.2%

Jack supports panel at chord break (arrow) as . . .

Bridge Steel Awaits Inspection

American Bridge Co. workmen have removed a 4-ft-long section of a steel lower chord of the Yeager Memorial Bridge near Charleston, W. Va., following a break in the structural member.

Falsework supporting a 500-ton hydraulic jack has been placed under the adjacent panel point. The jack is carrying an estimated 150 tons.

The cut-out section will be tested in the laboratories of U. S. Steel Corp. in Pittsburgh to determine the cause of the break and to ascertain if the entire 60-ft beam needs to be replaced or if it can be spliced. Pittsburgh Testing Laboratories has been retained by the West Virginia Turnpike Commission, owner of the bridge, to observe the testing.

The 2,166-ft-long, two-lane bridge spans the Kanawha River at the northern terminus of the West Virginia Turnpike. The break was discovered during routine maintenance inspection.

Following the discovery, traffic on the bridge was limited to the lane on the opposite side for a period of about three days. After the hydraulic jack was placed, traffic was restored to both lanes. The bridge shows no other signs of distress.

Turnpike Manager W. E. Stahl said American Bridge made no guarantee on the $2.4-million structure, completed six years ago, but considers the repair a "moral obligation."

Howard, Needles, Tammen and Bergendoff, New York City consulting engineers, designed the bridge. Mr. Needles asserted the break occurred in a very low-stress member, which would be subjected to only 6,000 psi under full load. After the break occurred, stress apparently was distributed to other structural members, which carried the load without difficulty.

Texas May Broaden Scope Of 'Buy American' Rules

A bill now before the Texas Legislature would require that all state and local government agencies buy only American-made goods, for construction or otherwise.

The only Texas agency now enforcing a "buy-American-only" policy strictly is the Highway Commission. It was the Highway Commission that decreed in 1958 that contractors would not be able to use imported steel in highway projects. The resulting controversy flared off and on for more than two years, carrying as far as the U. S. State and Commerce departments. At one point, the Bureau of Public Roads ordered Texas to rescind its import ban. Finally, in 1960, BPR decided to look the other way (ENR Aug. 11, 1960, p. 70). It said it would let the states decide for themselves, but indicated it didn't want to know about any restrictions that would be put into effect.

Texas reinstated the "buy-American-only" policy. Importers gave notice they would fight the order in court, and indicated that they would base their case on state law that requires contracts go to the lowest responsible bidder. This assumes that contractors basing bids on use of foreign materials would come in with lower bids than those using only domestic materials.

Recently, the importers kept their promise. They filed suit in a district court claiming that the Highway Commission's order was unconstitutional. They also asked the court for an injunction that would prevent the Highway Commission from awarding a contract for a highway construction project that specified use of only American-made materials. The court refused the injunction. Plaintiffs have filed notice of appeal.

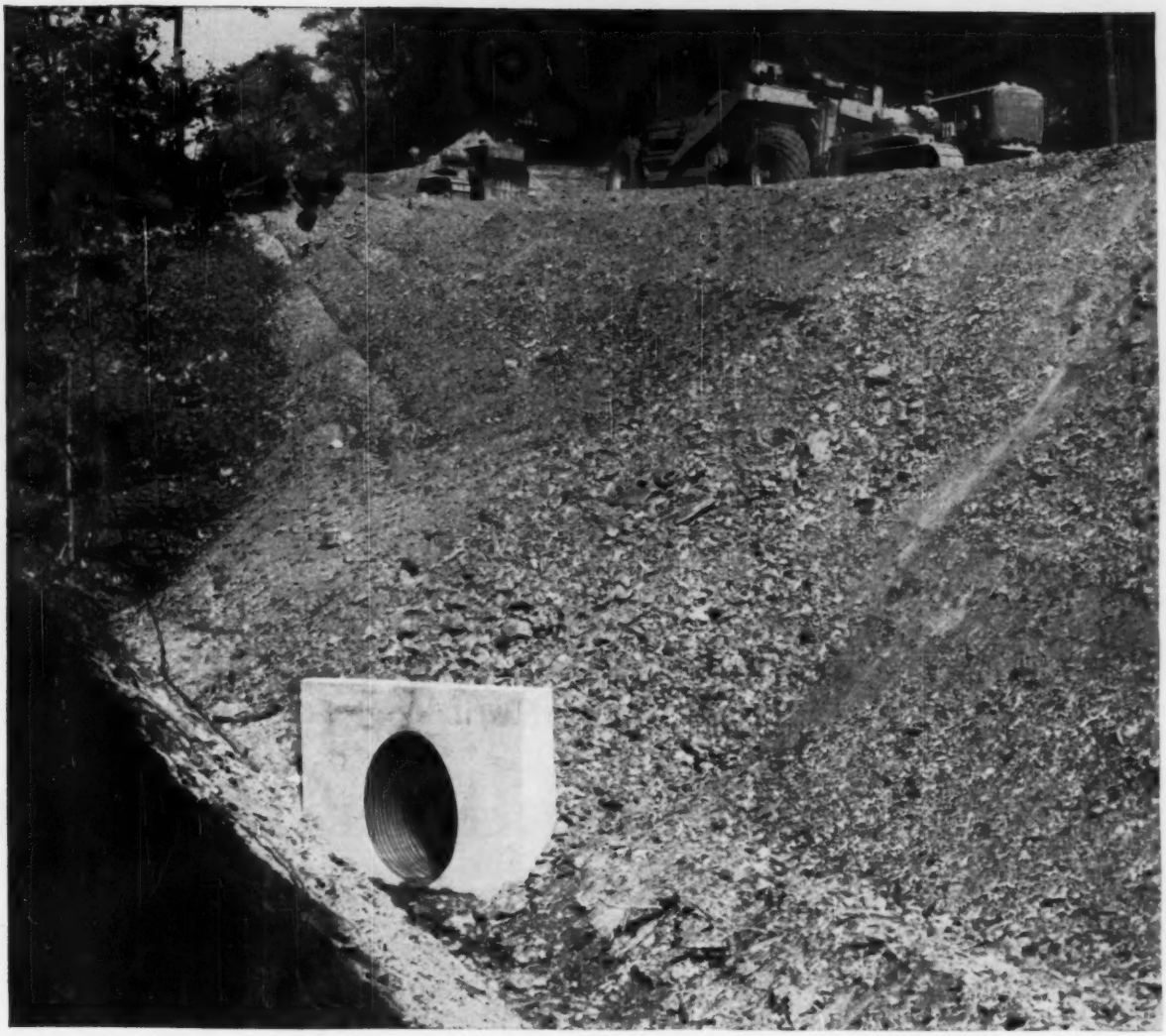
25% of Interstate System Open to Traffic, Says BPR

More than 25% of the 41,000-mile Interstate highway system is open to traffic, according to a Bureau of Public Roads report last week.

Federal Highway Administrator Rex M. Whitton announced that 10,440 miles of the system were in use by passenger and commercial vehicles by the end of 1960.

BPR reported 4,126 miles were under construction at the beginning of 1961 and engineering or right-of-way acquisition was in progress for another 10,032 miles. Nearly $10 billion has been put to work on the Interstate program in its four and one-half year history.

Half the mileage in use was completed to 1975 traffic standards and 3,041 miles for current traffic. Balance is tollroads taken into system.



Drainage pipe of corrugated Beth-Cu-Loy steel flexes with fill to distribute stresses

One of the reasons why corrugated galvanized copper-bearing steel is such an ideal material for drainage structures is its combination of strength and flexibility. This makes possible the use of light-weight, thin-walled culverts which flex with the fill without buckling under the stresses. In this transverse flexing action, the pipe draws support from the surrounding material, distributing the load peripherally instead of concentrating it through the vertical axis.

Flexibility also permits corrugated galvanized Beth-Cu-Loy pipe to take the heavy vibration of modern traffic, as well as the shifting and freezing actions of soils. Longitudinal flexibility makes grading and alignment easy.

With Beth-Cu-Loy galvanized drainage structures, there's less earth to remove, less to replace; the trench need be only as wide as the pipe. Field joints can be made easily and quickly, and the long pipe lengths (up to 20 ft) mean fewer joints and rapid installation.

Beth-Cu-Loy corrugated galvanized sheets conform to the rigid specifications of the AASHO. We shall be glad to furnish complete details about Beth-Cu-Loy sheet steel and how to solve your drainage problems with pipe made from these highly corrosion-resistant sheets. Just ask your fabricator, or write direct to us, for a copy of Booklet 425-A. Your inquiry will receive our prompt attention.

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Admiral H. G. Clark looks at Seabee construction on Okinawa.

They do heavy constructio

The Seabees After 16 Years:

By Lauress L. Wise

This weekend, the U. S. Navy's Seabees will be joined in spirit by ex-Seabees around the world as they celebrate the March 5 anniversary of their can-do outfit's beginnings during World War II.

It is 16 years since the Seabees were born. The outfit grew quickly to a peak of 250,000 men, whose wartime exploits were reported in ENGINEERING NEWS-RECORD, largely by N. A. Bowers (now retired and an ENR consulting editor), who traveled to and with the Navy's Construction Battalions throughout the Pacific in 1944.

Although Seabees fired few shots in anger, they had an indispensable part in winning the war in the Pacific.

What of the Seabees today?

The Seabees are still a vital part of the strategic force of the U. S. Navy. Manpower is down to only about 2% of the World War II peak. But they stand ready to contribute to any military effort should the cold war become warm.

Meanwhile, they contribute to fleet efficiency through offshore base construction efforts planned to develop and maintain their valuable technical skills.

Here's a quick picture of today's Seabees.

- They are younger than their World War II counterparts; average age is about 21 as compared with 33.
- They are a far better military outfit than were Seabees 16 years ago; military discipline and morale are high.
- They are a remarkably effective construction organization, as shown by such work as complex precast concrete building on Okinawa and a Project Mercury tracking station on Canton Island.
- They are staffed by competent and dedicated construction men; this holds true from the top admirals down to petty officers and non-rated men.

The primary wartime functions of the Seabees, as defined by the Chief of Naval Operations, are "construction, alteration, rehabilitation, and repair of Naval overseas shore facilities to support operations of Naval and Marine Corps Forces." Their peacetime operations are largely devoted to developing capability to perform these wartime functions.

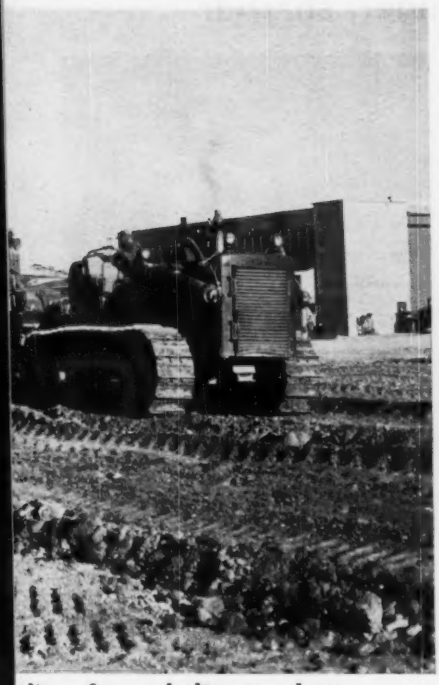
I. Seabees in Transition

Since 1945 the Seabees have been engaged on a number of construction jobs. One of the most spectacular was Cubi Point Naval Air Station in the Philippines, constructed in the early fifties. Another is a precast concrete Marine base on Okinawa, now nearing completion.

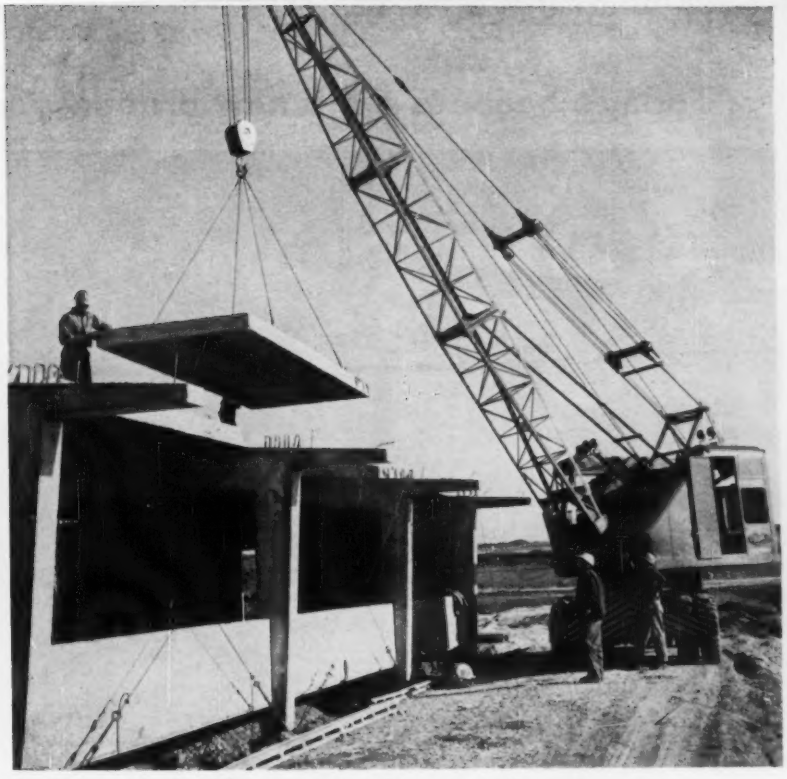
At the close of World War II it was obvious that Seabees would continue to be needed as ready units of the Navy's operating forces. But maintaining battalion unit integrity was a problem in peacetime.

As a first approach to the problem, the Seabees served for several years as maintenance units on overseas bases. This proved to be undesirable for a number of reasons. The main strategic value of the Seabees is as an organized mobile construction force ready to support forward fleet activities in the event of hostilities; by serving as maintenance personnel, they lacked the ready organization necessary for mobility—they did not get sufficient logistical experience.

Larry Wise was a Seabee himself for three years during World War II. He's a Naval Reservist with the rank of Commander now, and a 15-year veteran as ENR's West Coast editor. Recently he traveled 17,000 miles in the Pacific, visiting Navy construction projects and the Seabees in Hawaii, the Philippines, Guam and Okinawa. This article is the first of two on the post-war Seabees. Next week's story details the Seabees building know-how on two big jobs.



ding for a helicopter base.



And they do building construction—a roof goes on.

A New Breed, But Still Building

Another drawback of the maintenance concept was the limited training it afforded in technical skills. A further limitation was that most Seabees serve only overseas. With limited possibility of stateside assignments, the re-enlistment rate was low. This is still a problem—particularly for the first re-enlistment—but has been improved by limiting overseas tours.

• **Korea had its effect**—The Korean war had as much to do with crystallizing the present status of Seabees as any thing. That is true even though the Seabees were not used widely—extensive construction of Naval facilities was not needed in Korea. But Seabees supported Marine landings at Inchon and did considerable work at the Pusan port area. Korea showed that it was advisable to have Seabee units ready and mobile.

Korea also spurred the Navy to develop major operating facilities at Subic Bay in the Philippines. Much of this work was done by civilian contractors, but Seabees were assigned to do the Cubi Point Naval Air Station phase of the Subic Bay buildup. Cubi Point was a 20-million-cu-yd earthmoving project, and it included many buildings. Here the post-war Seabees gained valuable construction experience.

It was about this time that the field units were designated "Mobile Construction Battalions." In 1951, the last remaining World War II unit—the 103rd Naval Construction Battalion, stationed on Guam—became U. S. Naval Mobile Construction Battalion TEN (MBC-10). It was "home ported" in Guam until 1958. Then it moved to the Construction Battalion Center at Port Hueneme, Calif., home port of all Pacific Seabee units.

The "home port" concept is an important factor in morale. It is here that officers and men are entitled to keep their families. Deployment schedules call for Seabee units to be at their home port at least three months a year.

For several years in the early Fifties, the Cubi Point projects were the major task of the Pacific Seabees. Except during the rainy season—July to mid-October—from two to four MCB units were deployed at Cubi Point. They would return to Port Hueneme for three or four months each year for leave and training. Thus was established the pattern of overseas deployment and stateside leave and training that is generally followed now.

• **Table of organization**—Official organization tables for a Mobile Construction Battalion shows a unit comparable to the World War II battalions of slightly more than 1,000 men and about 50 officers. But most of the units in operation now are kept at about half strength. These units of 550 men and 17 officers are large enough to tackle an effective military and construction operation. And they can be expanded, if necessary, for special missions or for wartime operations.

There are, of course, exceptions to the half strength principle. One is MCB-3, which for the last two years has been building the Futema Marine Corps Air Facility on Okinawa. MCB-3 is a full-strength unit. But about a quarter of the personnel is always on leave and retraining assignment. Thus, the effective strength of the battalion on Okinawa has been about 750 men and officers. When the construction effort at Futema is completed later this year, MCB-3 will be reduced to half the strength status of the four other Pacific battalions.

In the Atlantic area there are three half-strength units and two quarter-strength units. Some of the assignments for Atlantic Seabees require these smaller units. Thus, they were made independent entities instead of separate detachments of a large unit. Such separate detachments would be difficult to administer.

(*Turn the page*)

. . . Today's Seabees are a new breed – younger, sharper

CDR. JOHN BEAVER, CEC USN a World War II vet who came back. He has commanded MCB-3 on Okinawa, building Marine base structures in precast concrete.

PETTY OFFICER Byron Hodgson runs a truck crane. He's got 13 years in at 33.

The detachment principle is still used, however, when the number of men needed is small and when separation from the parent unit is for a short time and for a special purpose. A detachment of MCB-10, for example, gave the Navy valuable snow compaction experience in work on the parking lots for the 1960 Winter Olympics at Squaw Valley, Calif. (ENR March 24, 1960, p. 157). And another MCB-10 detachment of 80 men and two officers built facilities for a Project Mercury (better known as the "man in space program") tracking station on Canton Island. This operation was completed last fall. The Seabees, in this instance, worked for the National Aeronautics and Space Agency under the direction of civilian design contractors.

• **The "ready" unit**—Although all battalions are expected to be ready for quick movement, one of the Pacific battalions is designated the "ready" or "alert" unit. In an emergency, this is the outfit that will have to move first and fastest.

Its duties, which up to now have been about the same as those of other Seabee battalions, will be modified later this year.

The Navy is not completely satisfied with the mobility of the alert unit as now operating. Recently, in a Navy movement to meet one of the periodic cold war crises, the alert unit and its equipment were loaded aboard ship in less than 48 hours. But some equipment, particularly small tools that were in use on the unit's current job, had to be left behind.

The Navy intends to change the emphasis of the alert battalion's operations from construction to military training with Naval and Marine units. There will be some construction assignments, but only of a secondary nature. The unit's tools, kept ready but idle, will thus be available sooner for a fast change of scene. The tour for an alert unit will be six months at a forward location in the western Pacific. While there, they will perform both military and construction operations. But heavy emphasis will be placed on military operations, working with Naval and Marine units. Construction assignments will definitely be a secondary consideration for this alert battalion.

II. Who Are the Seabees?

Construction Battalions are made up of personnel ranging from 17-year-old construction apprentices to career Civil Engineer Corps Commanders with many years of Naval and construction experience.

Almost all higher ranking officers are veterans. This includes Rear Adm. Eugene J. Peltier, CEC, USN, who is Chief of the Navy's Bureau of Yards & Docks. In 1945, Admiral Peltier commanded the 137th Battalion and later the 54th Regiment, both of which were involved in construction operations in Okinawa.

Rear Adm. H. G. Clark, CEC USN, who in addition to other jobs holds the title Commander, Naval Construction Battalions, Pacific (COMCBPAC), has probably had more Seabee service than any officer now on active duty. He works directly for Rear Adm. Redfield Mason, USN, who is commander of all Pacific Fleet Service forces, of which the naval construction force is but one.

Garner Clark is a 1930 graduate of the U. S. Naval Academy and holds a masters degree in civil engineering from Renssalaer Polytechnic Institute. His Seabee duty started in 1942, when he became training officer at the Naval Construction Center at Camp Perry, near Williamsburg, Va. This was followed by two years in the South Pacific as commanding officer of the 16th Naval Construction Regiment.

In late 1943 a unit of this regiment completed a fighter strip at Torokina to Bougainville Island in only five weeks. As a result, Admiral Clark received this message from the Navy's most colorful wartime commander—Fleet Adm. W. F "Bull" Halsey: "It is evident that there has been no bull or dozing at Torokina."

Admiral Clark's most distinguished Seabee service came as executive officer of the Fifth Naval Construction Brigade, which was under the command of Vice Adm. W. O Hiltabidle, Jr. In this spot, Admiral Clark landed with the invasion forces on Guam and helped direct the construction efforts that made that island the strongest Naval base in the Western Pacific. For his part in the action he was awarded the Legion of Merit with Combat "V".

STEELWORKER 1/C Scott Lowe is 22. He's getting 4½ years of building experience.

BUILDER 3/C Wayne Strausser has charge of framing a theatre on Okinawa. He's 20.

In addition to other important post-war assignments, Admiral Clark was deputy director of the Pacific Division of the Bureau of Yards & Docks in the early fifties. He now heads that organization in addition to his direct Seabee assignment. And before assuming his present position in 1959, he commanded the Seabee forces in the Atlantic.

• **Strong officers, men**—Although top-level direction is important, the strength of today's Seabees lies in the officers and men actually assigned. Duty with the Seabees is becoming increasingly important for a successful career in the Civil Engineer Corps. And as less than 10% of the CEC officers are on duty with Seabees at any one time, some officers will not get a two-year tour with Seabees in the course of a 20-year career.

Although there are relatively few Annapolis graduates in the Civil Engineer Corps, former midshipmen hold key spots in the Seabees. Among the Annapolis grads in the Pacific area alone are Cdr. John P. Williams, commanding officer of MCB-11, Lt. Cdr. William E. Kaloupek, who is just finishing a tour as executive officer of MCB-3, and Lt. William M. Zobel, operations officer of MCB-5.

Typical of the dedicated Seabee officers is Cdr. John F. Beaver, CEC USN, who has just completed a two-year tour in directing the construction efforts of MCB-3 on Okinawa. This is Commander Beaver's second Seabee duty. Just after he entered the Navy in 1943, he spent 2½ years with the 97th Construction Battalion in the European Theater.

A native New Yorker, graduate of Manhattan College, Commander Beaver joined the Navy after working as an engineer on the Panama Canal. After the war, he returned to civilian life and worked for Merritt-Chapman & Scott Corp. in New York. But the attraction of a Navy career proved too great. John Beaver re-entered the Navy in October, 1946. "The opportunity to get ahead is there," he says.

The enlisted men in today's Seabees are much younger on the average than those of World War II. Commander Beaver, looking at complex precast concrete hangars and warehouses at the Futema base, commented: "Just think, these buildings were built by kids." But his "kids" are well trained and are directed by experienced older hands.

One such man is Equipment Operator First Class Byron D. Horgson, who operates heavy-duty cranes and supervises crane crews for MCB-3. Hodgson, 33, is on his third enlistment, having served during World War II with the 301st Construction Battalion, a special dredging unit that operated in the Pacific. After a brief civilian stint as a heavy-duty cross-country truck driver, Hodgson returned to the Navy. He now has 13 years of service under his belt and plans to re-enlist this November, even though he will probably have continued prolonged absences from his wife and three daughters. He is interested in the work he's doing and feels that the Navy has a good retirement program—he can retire after 20 years service at age 40.

An example of a younger top-rated career enlisted man is Steelworker First Class Scott F. Lowe of MCB-5. Scott Lowe is only 22 years old and has already put in 4½ years of Navy duty. Except for boot camp and for the Class A steelworkers school, his entire service career has been with MCB-5 serving on Kodiak, Midway, Guam, Okinawa and the Philippines. Despite his youth, he has directed work in erection of heavy precast concrete elements on the Sukiran project on Okinawa for MCB-5.

An even younger skilled tradesman is 20-year-old Builder Third Class Wayne E. Strausser. Although in the Navy for just over two years, he is in charge of important framing and finish carpentry work on a theater building on Okinawa Wayne Strausser's experience was not all gained in the Navy. His father, a Seabee officer during World War II with the 117th Construction Battalion and the 39th Construction Regiment, is a contractor in Pennsylvania. Young Strausser grew up with a hammer in his hand. He is one of many enlisted men who asked to be assigned to the Seabees because he felt he could gain good work experience. He will not make a career of the Navy; he plans to return to civilian life when his enlistment expires next November.

Men like Hodgson, Lowe and Strausser have all developed skills that are valuable to the Navy. And on return to civilian life their skills will be of great use in the construction industry.

III. How They Operate

Seabee units are organized for both construction and military operations. They must be prepared to defend what they build if necessary.

Company organization has been standardized: "A" Company is the equipment company and includes equipment operators, mechanics and truck drivers. "B" Company is a special construction company – electricians, plumbers, carpenter shop workmen, steel erection crews. "C" and "D" Companies are for general construction —carpenter crews and concrete crews.

Special purpose platoons, such as dock builders, might be included. Half-strength battalions often have only one general construction company. And it then usually becomes the largest company in the unit.

Headquarters Company is, as its name implies, the service company, which includes cooks, office workers, engineering staff, and the like.

(*Turn the page*)

. . . Seabees build on the ground, but stay ship-shape

• **Fire team is the unit**—Basic unit from both a military and construction standpoint is the fire team. This is a group of from two to five men that in military operations actually work as a rifle or weapons team. On construction work they might be a carpenter and his helpers, or an equipment operator, his oiler and his rigger.

Normally, three fire teams form a squad, which would be a work unit. Three squads form a platoon, which is commanded by a junior officer or a chief petty officer. And a platoon is a work force as well as a fighting force.

This organization permits ready assignment of work units. For example, MCB-11 arrived in Guam recently to take over housing construction and other work from another unit, which had left Guam a short time previously. By having their work organization already established in basic fire-team units, MCB-11 crews were out on the job on the day following their landing on Guam.

Key officer in the construction work is the operations officer. He is a staff officer and generally the third senior CEC officer in the battalion. He directs and plans all construction work and generally makes his headquarters in a field office on the construction site. He will assign phases of the work to project superintendents, who are usually company commanders. And they in turn will break down their part of the work among their platoons and squads.

• **Day's work**—A typical day for MCB-3 gives an idea of how Seabees operate on construction.

The battalion musters (morning quarters) at 7:00 am. This formation includes all officers and enlisted men in the battalion who are not then actually on duty. Roll is called; orders for the day are read.

Immediately following morning quarters all officers and men depart for their job assignment. This gets the men to the job substantially before 8:00 am ready to work. The work day continues until 4:30 pm when the men return to their base camp.

Construction officers and key chief petty officers still have important work to do.

An operations meeting is held every work day at 4:30 pm. This usually takes a half hour and often take more than an hour. In MCB-3 the meeting is conducted by Lt. B. L. Saravia, operations officer.

Specific plans for the following day are made: assignment of grading equipment, scheduling of concrete placement, and the like. By use of large charts, the general construction plan for the following week is also developed and kept up to date. Thus, the construction officers work day extends from morning quarters at 7:00 am until they return to their base camp usually about 6:00 pm. Then there are often military duties to perform in the evening.

MILITARY FORMATION is reminder that Seabees are organized for fighting as well as building. Muster is at 7 am; work starts an hour later.

OPERATIONS MEETING is a daily skull session for construction managers—the battalion officers. Seabee service is important officer career step.

• **Choosing the projects**—Under peacetime conditions, selection of work for Seabees to perform is a very complex task. For obvious reasons they are not employed on projects "in competition with civilian labor in the continental United States or of Alaska."

Prolonged and complex projects such as the Cubi Point and Futema jobs are not entirely desirable. They cut down on mobility; the outfit does not gain experience in movement that is so important.

Fortunately, many overseas naval bases from time to time have moderate construction needs. Major items of deferred maintenance develop that are too large for station public works forces and cannot be handled economically by contract. A group of such items can provide an ideal six-to-nine-month assignment for an MCB unit—or even for two units in sequence.

For example, MCB-9 will spend several months on Midway Island this year. And MCB-10, which left Guam in the late fall, will be on Adak in the Aleutians from March to October—thus missing the difficult winter month work season.

And so the Seabees keep moving, and working and training. New names, younger faces; some old skills, greater mobility. Still going strong after 16 years.

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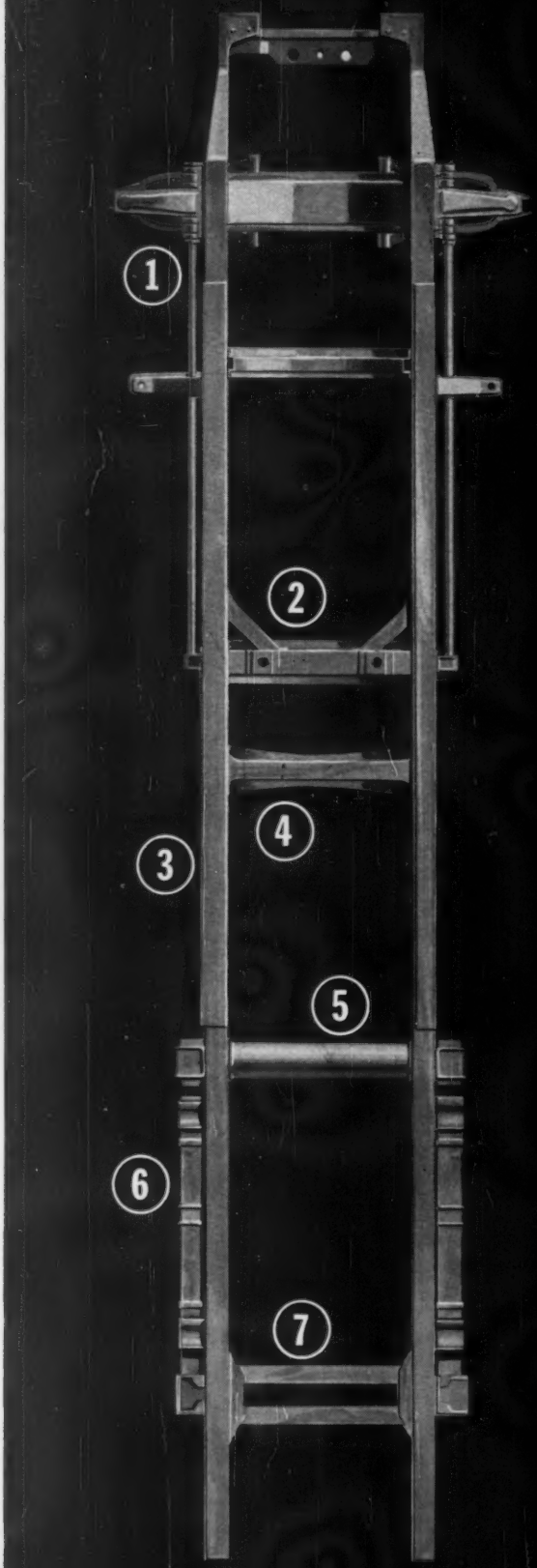
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■ **EXTRA BEEF FOR BRUTAL DUTY:** That beaver emblem on the sides of Chevrolet's new extra-duty-equipped medium- and heavy-duty trucks will be showing up more and more where the jobs are toughest—where getting the work done demands performance beyond the normal call of duty. These Chevies look the same on the outside, but there's a big difference down deep. More than just an add-on or build-up package, Chevrolet's new off-road equipment option combines maximum-duty suspension components with a special-built frame that's engineered for all-out ruggedness in every detail. A frame with K-braced ladder-type construction that delivers extra torsional resilience to soak up brutal beatings.

Here's what you get: ❶ Heavy-duty 4,000-lb. torsion bars up front, anchored right at the frame K-brace crossmember for sturdy support. (Anchors are truss-rod-connected under the frame for an extra margin of strength.) ❷ Massive K-brace crossmember between the torsion bar anchors, specially designed for maximum structural rigidity and fabricated of high-tensile-strength steel. ❸ Extra-heavy side rails, of full quarter-inch stock, with full-length L-plate reinforcements. ❹ Heavy-gauge alligator-jaw crossmembers in frame midsection that combine high strength with give-and-take resilience. ❺ A massive tubular crossmember, anchored in extra-heavy cast steel brackets at the rear spring front hangers. ❻ Maximum-duty 11,500-lb. rear springs of standard variable-rate design, plus the extra margin of 2,000-lb. auxiliary springs. And ❼ a massive double channel crossmember at the spring rear hangers heavily gusseted fore and aft—the finishing touch of rock-ribbed ruggedness between roughest roads and heaviest loads.

If yours is a truck-killing job, this new option is tailor-made for you. You can get it on any of four medium- and heavy-duty models to match your needs best, and you'll be surprised at how little it costs. See your Chevrolet dealer right away for full details. . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

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C7303	157″	84″	23,000 lbs.	7,000 lbs.	16,000 lbs.
C7503	175″	102″	23,000 lbs.	7,000 lbs.	16,000 lbs.

1961 CHEVROLET STURDI-BILT TRUCKS

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Two roadways on top deck; one under. Approaches are box girders cast on forest of falsework.

Freeway Takes Three Roadways

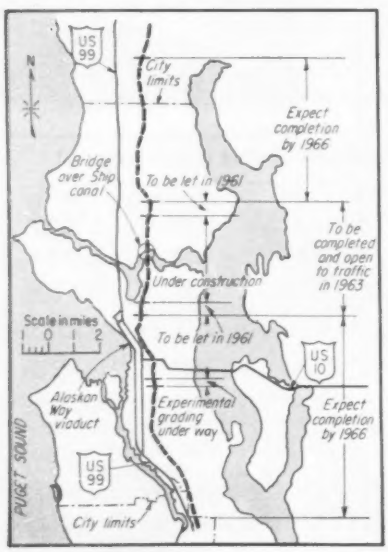
It's the biggest highway job in the Northwest right now.

It's been abuilding for over two years and won't be finished until 1966.

It will have three roadways—one reversible—for seven of its 20 miles.

It's Washington's $175-million north-south freeway through Seattle, and it has considerable variety of construction.

A double-decked steel bridge will take the freeway over the Lake Washington ship canal. Its approaches—also double-decked—are concrete box-girder construction.



CURRENT WORK centers on crossing of Lake Washington ship canal.

Prestressed concrete girders will carry long sections of viaduct on 4-ft-dia prestressed cylinder piles.

And side-hill cuts in several places will require extensive retaining walls.

• **Major crossing**—The steel structure over the ship canal is a cantilever truss with 552-ft main span flanked by 348-ft side spans, plus three lesser approach spans. At its center it clears the water by 135 ft.

The upper-deck roadway will have four lanes in each direction. Its 116-ft width will cantilever out more than 23 ft beyond the centerline of each truss. The lower deck roadway—narrower and between the trusses—will carry four lanes that will be the freeway's reversible roadway. (For design for reversible traffic see ENR Aug. 14, 1958, p. 30.)

Erection of steel for the major freeway structure was started with crawler cranes, which put up the side spans. Now, a pair of stiffleg travelers mounted on rails at the upper-deck level will erect the center span by cantilever method. Allied Structural Steel Companies of Chicago is doing this work. Schueman & Johnson of Seattle built the bridge piers; Paul Jarvis & Sons of Seattle will do the roadways.

• **Box-girder approaches**—The 1,000-ft north approach to the bridge was finished last fall; a slightly longer south approach is still under construction. Both are double-deck structures; all but 256 ft on the south approach is box-girder construction.

Box sections are 8 ft deep with top and bottom slabs 6 and 7 in. Vertical web spacing varies from 7 to 12 ft but is normally 9 ft.

Forests of high timber shores carried the concrete box girders while they were cast and cured. Rough lumber poles—only their bark removed—were braced and framed to carry wood forms for the concrete structure. The rough timber, nominally 12-in., served well the two contractors who used it. Each piece had reuse. Forms themselves generally have gotten three uses. MacRae Brothers Construction Co. had the north approach; L. S. Mullin, Inc., had the south approach. Both are local companies.

• **Prestressed concrete viaduct**—North and south of the ship canal crossing there are lengths of the freeway made up of three parallel viaduct structures. (The middle viaduct carries the reversible roadway, which is three and four lanes wide.) Both of these viaduct structures use 4-ft-dia hollow prestressed cylinder piles carrying prestressed girders and cast-in-place decks. Ravenna Viaduct, north of the canal, is 1,372 ft long; Lakeview Viaduct, south of the canal, is 2,727 ft long.

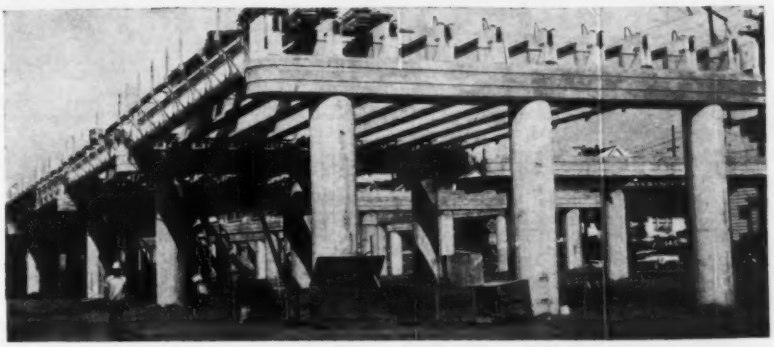
The Lakeview Viaduct has 82 spans, 90 ft long. It is taking 973 girders and 405 columns. Ravenna Viaduct will have 680 girders and 266 piles. Only major difference between the two viaducts is in the manner of placing the 4-ft cylinder piles: On the Ravenna job, MacRae Brothers Construction Co.

Box girders carry two upper roadways, one lower roadway to grade. Access is ramp at right.

Aloft

drove the piles; on the Lakeview job they are placed on concrete-filled drilled, belled caissons. A joint venture of Morrison-Knudson Co. and John Rumsey Co. had this contract.

Piles driven by a 42,000-ft-lb hammer were tested (ENR June 9, 1960, p. 50) and are figured to have a 260-ton bearing capacity. The columns that were not driven were placed on concrete caissons belled out from 4½ to 9 ft diameter at depths averaging 35 ft.



Prestressed girders on cylinder piles, some driven, some set.

Side-hill grading includes experimenting with several slopes.

• **Side-hill grading**—Plenty of grading remains to be done before the Seattle Freeway carries traffic on its first seven miles in 1962. Much of this work is side-hill grading; many hundreds of feet of retaining walls will be involved.

Two major grading contracts are underway now—one held by Erickson Paving Co. is for $1.4 million and the other awarded to Puget Sound Bridge & Drydock Co. totals $3.1 million.

To complete the first seven miles of usable freeway, three more contracts need to be let and finished. The Highway Department will open bids March 7 on one contract expected to total $6 million. Another to be bid in the spring is expected to run $7 million. These are the largest roadbuilding contracts Washington has ever let. A third contract, to be awarded in the first half of 1961, will extend the freeway to the north and permit 1962 operation.

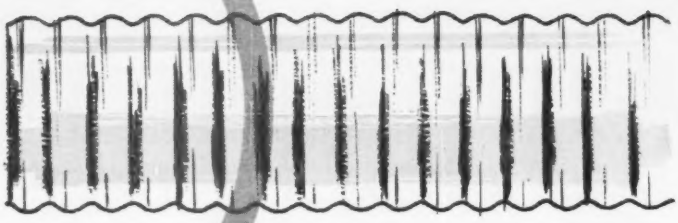
Side-hill grading in an area south of the Seattle business district will be complicated by poor ground conditions. The state highway department has let a $329,000 contract for several test sections, which will be left in place through the next two winters to see which is most satisfactory.

Three of the test sections have straight slopes—2 on 1, 3 on 1 and 4 on 1. Another has steeper slopes, 1½ on 1, but includes a pair of 15-ft-wide berms spaced at 30 ft vertically. The berms are covered with granular material and include drains. The slopes, in places, are covered with granular material. A third test section has much steeper (¼ on 1) slopes with 30-ft-wide berms spaced at 20 ft vertically.

Design and construction of the Seattle Freeway is handled by a specially set up district of the Washington Highway Department. It has this 20 miles of freeway in its jurisdiction plus the approaches to the Seattle end of the second Lake Washington floating bridge.

Walter E. McKibbin is district engineer. W. A. Bugge is State Highway Engineer.

Armco Pipe, installed in 1909.



Armco Corrugated Metal Culverts OUTLAST THE ROAD!

Armco Pipe, installed in 1911.

Installed 50 and 52 years ago respectively, these Armco Corrugated Metal Pipe culverts are still in good shape although the old road has been abandoned in favor of a new, wider and safer highway.

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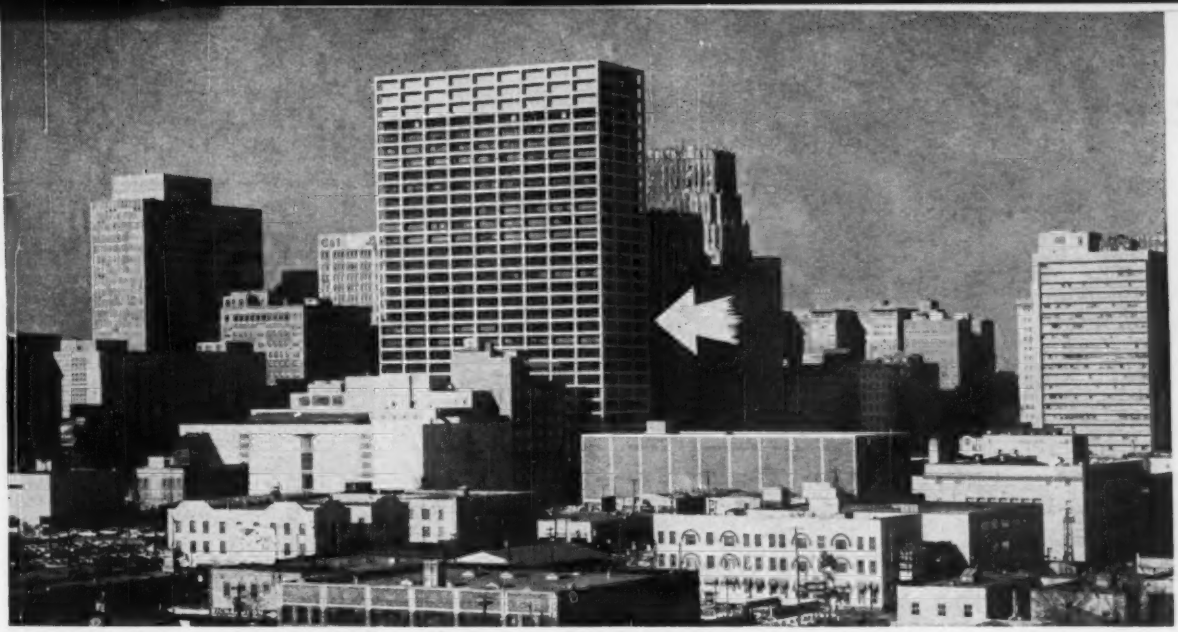
If desired, these drainage structures in Butler County, Ohio, can be excavated and reinstalled elsewhere with assurance of many more years of service.

Many engineers have long recognized the advantages of the flexible strength of Armco Corrugated Metal Structures, their durability under rigorous conditions, and the wide selection of sizes between 8-inch and 24-foot diameters. Contractors like the economy, ease of handling and installation of Armco Pipe and the helpful service of their Armco Sales Engineer. For more data, write: Armco Drainage & Metal Products, Inc., 5221 Curtis Street, Middletown, Ohio.

ARMCO Drainage & Metal Products



Striking marble grid encloses Houston bank, but . . .

There's More to It Than Meets the Eye

The First City National Bank of Houston—dedicated last month—wears many of its noteworthy features on its face. But there are some really significant ones beneath the facade.

The white marble sunshade on the exterior is eyecatching. The marble grid covers steel columns placed 5 ft in front of the building's gray-tinted windows and also forms a horizontal platform on which window washers can walk.

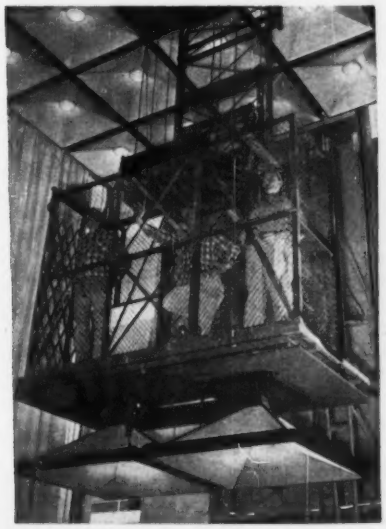
The glass-enclosed banking space, 120x162 ft, at the base of the 32-story tower, also is an attention drawer. The 32-ft-high bank ceiling is covered with 912 gold-anodized aluminum lighting fixtures, each about 4 ft square. The 35-ft-high windows are glazed with plate glass only ¼ in. thick. They are the largest windows ever installed with this thickness. The bank has a vault with a 50-ton door, 85 in. in diameter; the hinge alone weighs five tons.

What can no longer be seen is the tower's spectacular, 10,250-ton, all-welded steel frame. It rises to a record height of 410 ft.

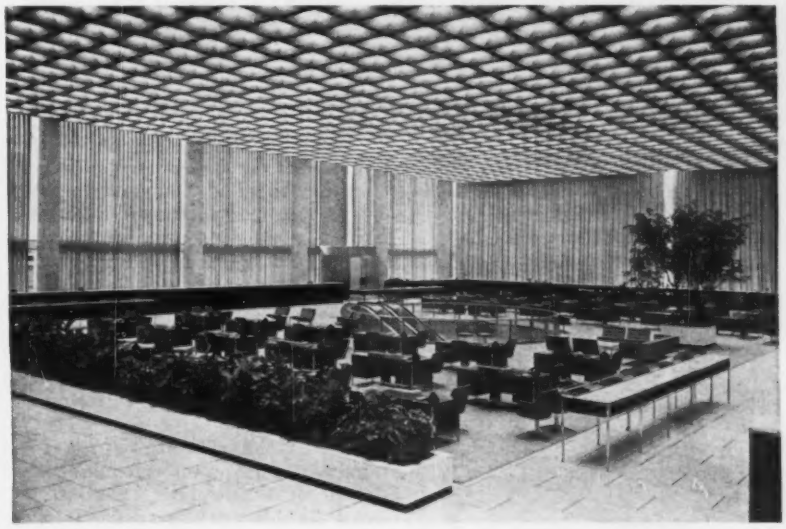
Another concealed feature is a telescoping elevator that provides access to air-conditioning equipment, wiring and ducts above the ceiling of the banking space. The elevator normally is stored above the ceiling. Its bottom, which matches the ceiling, holds two lighting fixtures.

Still another hidden but noteworthy feature is the heating and cooling equipment installed at the top of the building. Three gas-fired boilers are used to feed steam to the heating system and to turbines that drive the compressors for the 3,600-ton-capacity air-conditioning system.

Skidmore, Owings and Merrill of New York City are the architects, with Wilson, Morris, Crain & Anderson of Houston as consulting architects. Robert J. Cummins of Houston was the structural engineer, with Paul Weidlinger of New York City as structural consultant. W. S. Bellows Construction Corp., Houston, was the general contractor.



ELEVATOR BASE matches bank ceiling.



BANKING AREA, 120x162 ft, is unobstructed by columns, has 32-ft ceiling.

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New Men for California

California's Department of Water Resources is undergoing a change of its key personnel in the face of a $1.7-billion long-range water project. New men at the top are William E. Warne, director and Haywood G. Dewey, head of division of design and construction. And Alfred R. Golze will take on a newly created job—coordinating design and construction with development and operation.

Although Mr. Warne's most recent post was director of California's Department of Agriculture, most of his experience has been in water resources development in the U. S. Department of the Interior. He joined Interior in 1935 as a press agent after eight years as a reporter for the Associated Press and various West Coast newspapers.

In the next 16 years he held several jobs in the department. He was assistant secretary of the Interior for conservation for two years, assistant secretary for water and power for two years, and in charge of the Alaskan natural resources development program for two years. He was also chairman of the federal inter-agency river basin committee to plan river development in the Western states. At one time he was also assistant commissioner of the Bureau of Reclamation.

In 1951, Mr. Warne went with the International Cooperation Administration and was mission director on assignments in Iran, Brazil and Korea. He stayed in Korea from 1956 to 1959 as economic coordinator under U. N. command.

Gov. Edmond Brown brought him to California in the spring of 1959 to direct the state's fish and game commission. In January, 1960, he was shifted over to direct the Department of Agriculture, the position he just left.

He is faced with a critical task in directing the huge program initiated by his predecessor, Harvey O. Banks. So far he has avoided pronouncements on the exact course he will follow, but Governor Brown has made one pronouncement for him: Construction on the project's most important feature—Oroville Dam—will proceed as fast as possible. For assistance, Mr. Warne has secured the help of two other former Reclamation men.

Alfred Golze, like Mr. Warne, is a former assistant commissioner of the Bureau of Reclamation. He was selected for his newly created job as a result of a nationwide civil service competitive examination. As chief engineer, he will be responsible for general supervision and coordination of development, design and construction, and operation

William E. Warne

Tuthill Elected

One of the outstanding men of the California Department of Water Resources will have to find time on his agenda for another important job. He is Lewis H. Tuthill, newly elected president of the American Concrete Institute. His election was announced last week at the 57th annual convention of the Institute in St. Louis.

An ACI member since 1926, Mr. Tuthill has been vice president for two years, a member of the board of directors, and chairman of several committees.

He has been a frequent contributor to the ACI Journal and was awarded the ACI's Construction Practice Award for his 1945 paper, "Concrete Operations in the Concrete Ship Program." In 1956, he and William A. Cordon shared the Wason Medal for the Most Meritorious Paper for co-authorship of "Properties and Uses of Initially Retarded Concrete."

A 1920 graduate of Oregon State College, he has been continuously engaged in design and construction work on irrigation, water supply and dam projects.

He joined the California Department

Water Project

of the California Water Development System.

He joined the Bureau of Reclamation in 1933 as an engineer and has been with the Bureau almost constantly since. He was appointed assistant commissioner in 1958 and had direct responsibility for presentation and justification of the annual budgets to the Bureau of the Budget. For two years, 1943-1945, he served in the Bureau of the Budget as principal examining engineer. He is a fellow in the American Society of Civil Engineers.

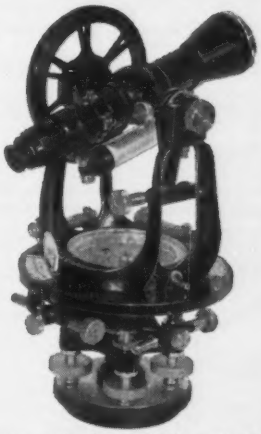
Mr. Dewey, who succeeds Walter Schulz as director of the division of design and construction, is also a comparative newcomer to state government. He came to the water resources department in late 1959 as chief of the special activities branch in the division of resources planning. Before that he worked for 23 years with the federal government, including six years with the Bureau of Reclamation in Denver. He has also served with the U. S. Army Corps of Engineers in Mississippi, Chicago and San Francisco. He too is a fellow in the American Society of Civil Engineers.

ACI President

of Water Resources in 1956 after 17 years with the Bureau of Reclamation. When he left for Sacramento, he was chief of the Bureau's concrete laboratory.

His job in California puts him in charge of all matters affecting the quality of concrete work in the water resources department. He directs all field and laboratory investigation and acceptance testing of materials and mixtures for concrete along with spec preparation and approval. He is also charged with maintaining contacts with all other organizations that work on the improvement of concrete so that the California water project may have early advantage of current developments in the field.

Mr. Tuthill says he will work hard as president of ACI to further the organization's aim of making available information and encourage concrete workmanship. "The ACI," he declared, "is a hard working organization and as president I expect to continue the program of improving standards and providing information for new and better ways to get first class concrete work."



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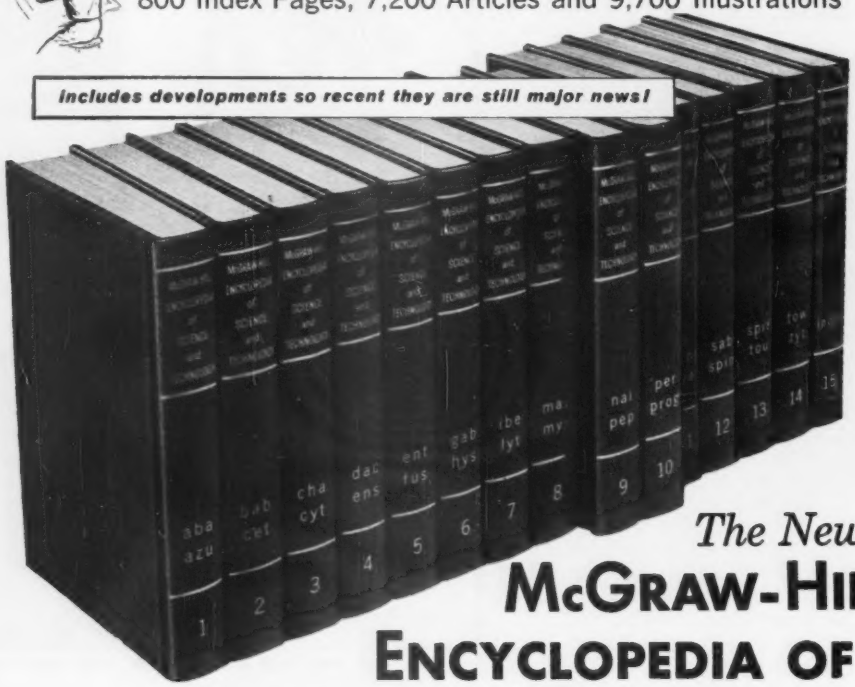

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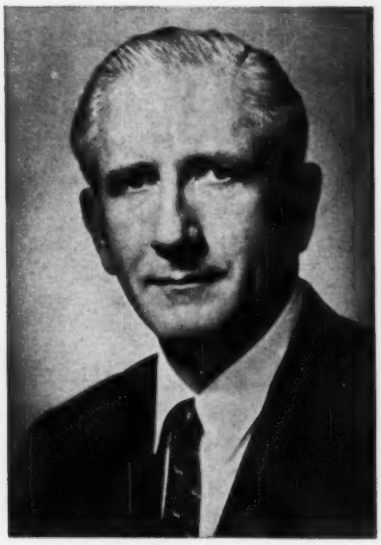


Gerald T. McCarthy

TAMS Partner Elected President of AICE

Gerald T. McCarthy, Senior partner of Tippets-Abbett-McCarthy-Stratton, New York City engineers and architects, has been elected president of the American Institute of Consulting Engineers for 1961.

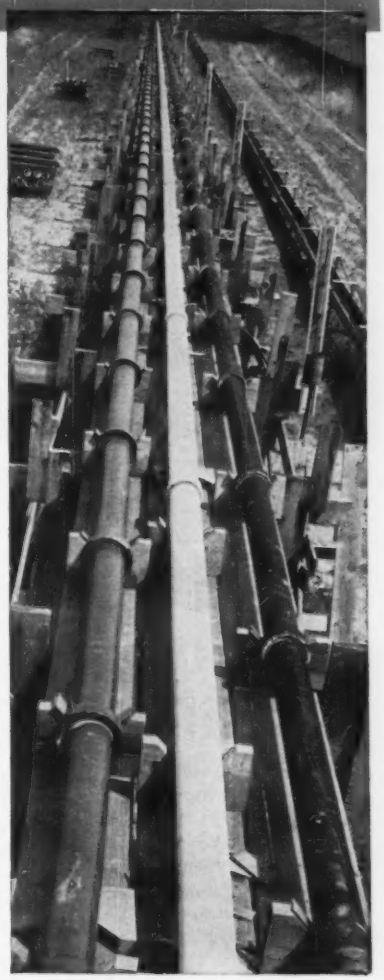
Also elected for 1961 are Harold M. Lewis, consulting engineer, in New York City, as first vice president and Gilbert I. Ross, a partner in Ross & Co., New York City, as second vice president.

Newly elected members of the governing council for three years are: David G. Baillie, Jr., partner in Singstad & Baillie, New York City; James P. Exum, partner in Howard, Needles, Tammen & Bergendoff, New York City; and Howard J. Williams, vice president, Fay, Spofford & Thorndike, Boston.

Mr. McCarthy, born in Dover, N. J., graduated from Pennsylvania State University in 1930 with a degree in engineering. His firm is engaged in an extensive international practice of engineering and architecture. TAMS recently received an award for their design of the Pan American World Airways passenger terminal at New York International Airport at Idlewild.

Mr. McCarthy is Chairman of the United States Committee on Large Dams, a director of the International Road Federation and the Far East-American Council of Commerce and Industry. He is a fellow of the American Society of Civil Engineers and a member of the Society of American Military Engineers, National Society of Professional Engineers and the United States National Committee on Irrigation and Drainage.

EXTENSIVE TESTS ESTABLISH VALUES for MANNING's n



There has been considerable loose talk lately about "new" values for Manning's *n* when figuring flow coefficients for sewer lines. Manufacturers of one substitute material for lifetime Vitrified Clay Pipe say their pipe has a lower *n* factor, allowing flatter grades or smaller diameter pipe.

Independent tests show that this is not true.

For example, the new "Design and Construction of Sanitary and Storm Sewers"* manual contains a table entitled "Suggested Values of *n* for Manning's Formula." According to this table in the *new standard* for sanitary engineers, the range of values for *n* is ***exactly the same*** for lifetime Vitrified Clay Pipe and all normally used substitutes for this material.

Extensive tests just completed by independent researchers demonstrated this same point, as do other independent studies quoted at length in the manual.

Remember, there is no substitute for research. And there is no substitute for lifetime Vitrified Clay Pipe in your sewer lines.

**Prepared by a Joint Committee of the Water Pollution Control Federation and the American Society of Civil Engineers, 1960.*

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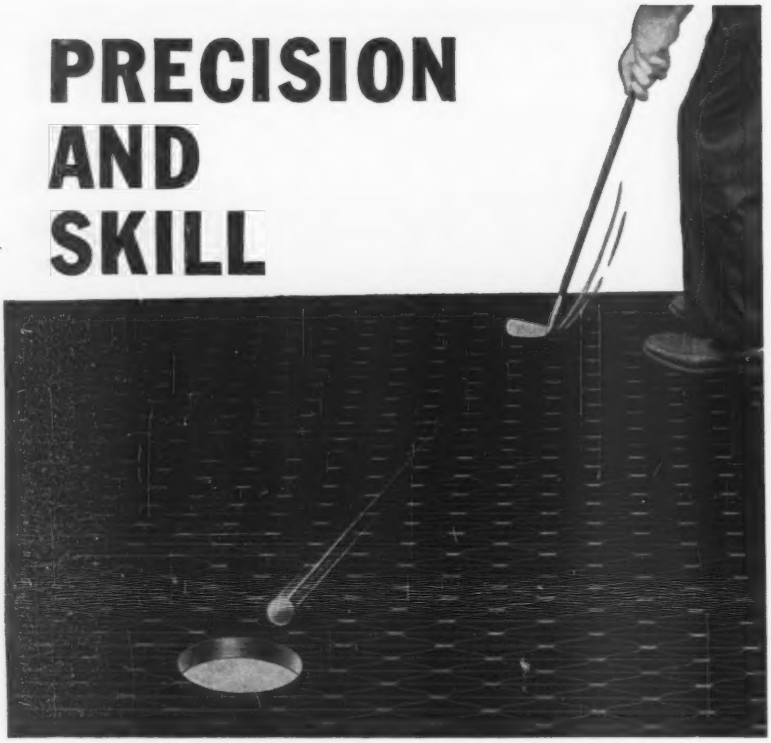

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Portable Dredge Saves On Handling, Manpower Costs

A portable sand and gravel dredge called Hydra-Drive is cutting production costs some 20 to 30 cents a yard, by reducing handling operations, equipment and manpower, its manufacturer says.

The dredge has a specially designed ladder with an hydraulically driven cutterhead that can dig at depths to 60 ft. Machines are available to pump materials up to 3,000 ft while operating at rates of from 75 to 1,500 tons an hour.

Price is $14,950 fob Nashville, Tenn., for cutterdrive for 12-in. suction line including 32-ft ladder, cutterhead, cuttershaft, cuttershaft bearings mounted in steel tube, thrust lock ring, coupling, underwater differential gear reducer, 50-hp hydraulic motor mounted on reducer, 50-hp hydraulic pump, 50-gal hydraulic reservoir tank with strainer, pressure relief valve and variable speed control valve.

Pump can be connected to any power source operating at 1,400 rpm, which produces 26 rpm at cutterhead. Drive requires 20 to 35 hp for working in light materials, 50 hp in heavy compacted materials.

For 10-in. suction pipe and with 26-ft ladder, the price is $12,875. American Marine & Machinery Co., Inc., 201 Woodycrest Ave., Nashville, Tenn.

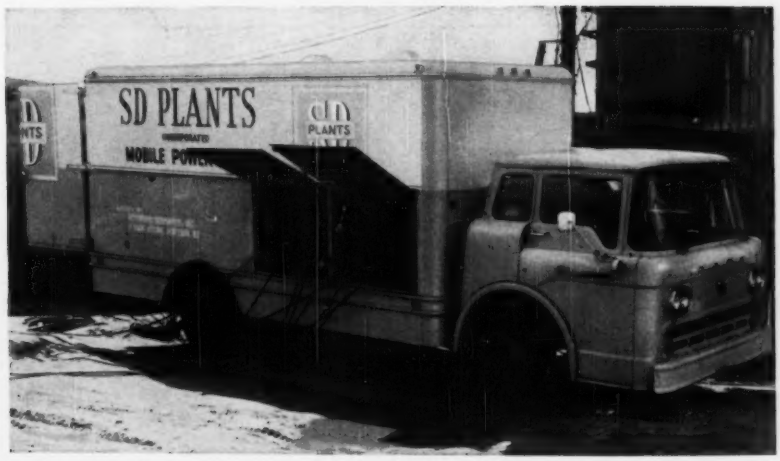
Rotating Water Jet Used In Tank Scrubbing Unit

A new tank cleaner for scrubbing stationary and mobile tanks in marine and industrial applications is driven by water.

Four nozzles rotating in a single plane spray the water like a rotating lawn sprinkler. Called the Model "H," the cleaner operates on its side, upside down or upright. When upright the nozzles rotate in a vertical plane. It weighs 64 lb and is mounted on a four-legged, collapsible stand. It may also be suspended from the end of the water-supply hose, according to the maker.

City-line pressure of 28 to 170 psi are sufficient to work the cleaner. It can handle liquids at temperatures up to 203 F, and is thus suitable for sterilizing.

The Model "H" may be used with $\frac{13}{32}$-in. or $\frac{7}{16}$-in. spray nozzles and, depending on operating pressure, has a capacity of 60 to 125 gpm. Sellers Injector Corp., 1600 Hamilton St., Philadelphia 30, Pa.



Welder Designed for Flexibility

It can take hours to set up and connect all the welding machines and their power distribution equipment on a new job. The "Mobilarc," however, provides erectors with up to 30 welding lines in a matter of minutes, its makers say.

The truck-mounted unit is a complete multi-arc welding system packaged in a single truck body shell. It was developed by J. B. Nottingham & Co., Inc., in conjunction with Scientific Design, Inc., which has been testing prototypes of the production model on plant construction projects for nearly 18 months.

One plug-in primary connection at the front of the truck body energizes the entire system. A silicon rectifier power source provides power to welding operators through thirty separate, 400-amp control stations for individual arc control. The power source is rated at 75 volts, 1,500 amps dc continuous output or 2,250 amps dc for a two-minute peak period.

Twenty-four of the control stations are mounted in the truck, 12 on each side, and six are portable. Operators simply run out cables from reels mounted inside the rear of the body, plug them into the outlets and start work.

The producers say that besides cutting set-up and take-down time, the packaged system provides flexibility as a job progresses. There's no need to move, connect, then take away separate welding machines. J. B. Nottingham & Co., Inc., 441 Lexington Ave., New York 17, N. Y.

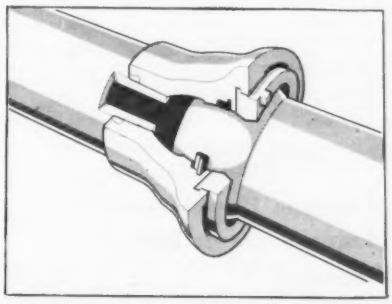
Flexible Joint Keeps Pipe Tight

The first installation of U. S. Pipe & Foundry Co.'s Usiflex cast-iron pipe now has several months of underwater service behind it. The project is a 10-in. sewer force main laid across Boca Ciega Bay near St. Petersburg, Fla. It includes an 872-ft underwater section of Usiflex.

The product is particularly well suited for underwater installations, the makers say. The flexible mechanical joints that distinguish it as a new product go together without nuts, bolts or wrenches.

Pipe sections have a ball on one end. The other end is threaded to screw into the smaller end of a separately cast bell. The ball end is held inside a bell by a detachable retainer ring. The ring and bell are fastened together by mutually interlocking lugs.

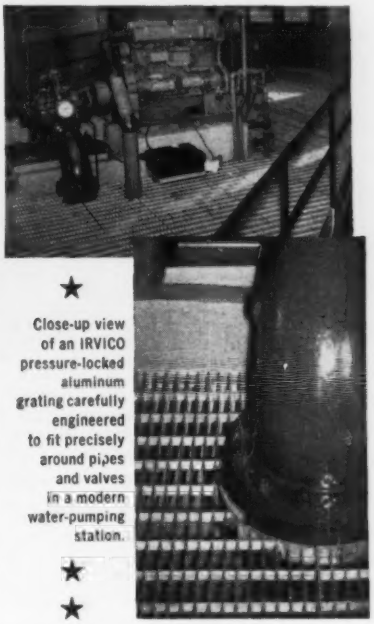
The joint is sealed by an L-shaped ring gasket, which seats in a groove inside the bell and presses against the ball.



GASKET presses against ball joint.

The pipe comes in 4-in. to 24-in. dia in nominal laying lengths of 18 ft. U. S. Pipe & Foundry Co., 3300 First Ave. North, Birmingham 2, Ala.

PRECISION AND SKILL



★

Close-up view of an IRVICO pressure-locked aluminum grating carefully engineered to fit precisely around pipes and valves in a modern water-pumping station.

★

★

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When you specify IRVICO grating, you receive the benefit of engineering and manufacturing skill developed during more than 57 years of experience in the production of grating. Each IRVICO order is given careful engineering attention. Experienced shop craftsmen execute your order with finesse, and our inspectors permit no grating to be shipped unless it meets your specifications and our high standards. This insures high quality grating, an excellent fit, and no extra installation costs. Catalog on request

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Originators of The Grating Industry Est. 1902
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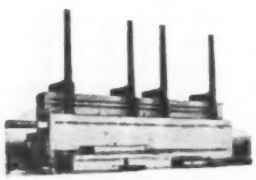

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• Large OD Steel pipe

561 S. PRINCE STREET LANCASTER, PA.

Shoulder Stabilization for New Jersey's

Garden State Parkway

Both shoulders on both northbound and southbound lanes of New Jersey's Garden State Parkway in Monmouth and Ocean counties will be stabilized under this $247,791 contract. E. E. McNierney of the N. J. Highway Authority is the engineer for the project.

Only $8,044 separated Manzo Contracting Co. Inc.'s, winning bid from the second low, A. E. Stone, Inc., Pleasantville, N. J. The high of seven was out by 30%.

The 2-in. shoulder pavement will be sand-gravel bituminous concrete, and will cover a 10-ft width of the existing gravel on the right shoulder, and 6 ft on the left. About 221,245 sy of the 2 in. pavement will be placed between Parkway mileposts 97 and 83.4.

Prevailing wages in Monmouth county include: laborers, $3.10-$3.35 plus $0.10 welfare; carpenters, $3.95 plus $0.15 welfare.

The bidding included:

1C Manzo Contracting Co., Inc., Matawan, N. J.	$247,791
2 A. E. Stone, Inc., Pleasantville, N. J.	255,835
7 Middlesex Concrete Products & Excavating Corporation, Woodbridge, N. J.	354,938
EE E. T. McNierney, New Jersey Highway Authority, Red Bank, N. J.	288,597

Bids: 9-14-60 Items	Unit	Quantity	Unit Prices 1C	2
Traffic, maintenance	ls	job	$7,000	$1,500
Clearing site	ls	job	5,000	2,500
Exc, roadway	cy	22,315	0.50	0.75
Subbase	cy	720	2.00	1.00
Topsoiling	cy	1,550	1.00	3.25
Fertilize & seed	sy	39,914	0.08	0.15
Gravel base course	cy	5,900	1.75	1.25
Asphaltic-oil RC-3	gal	110,360	0.14	0.138
MC-1	gal	44,672	0.13	0.138
Gravel, washed ¾"	t	4,428	3.50	5.00
Conc, sand gravel bit, shld pvt 2" thick	sy	221,245	0.70	0.70
4" thick	sy	2,250	1.35	1.45
base crse 6" thick	sy	2,900	1.75	2.20
FA-BC-2, 2½" thick	sy	2,900	1.30	1.50
RCP culvert, 54"	lf	16	40.00	31.00
Heads, reset	ea	15	40.00	30.00
Conc, headwalls & aprons cl C	cy	12	100.00	45.00
Tmbr guard rail, reset	lf	60	1.15	1.50
Traffic lines, erase	lf	5,800	0.10	0.13
Markings, pvt, solid & long inter	lf	11,100	0.07	0.05
Curb, asphalt	lf	1,000	0.75	0.70

Liquidated damages: $500 per day
Completion time: 80 working days

Montana Bypass Road Draws Fifteen Bids

Rerouting an 8.9-mile section of Montana's Raynolds Pass Highway to bypass the Madison River area damaged by a 1959 earthquake will cost the government about $11 a lin ft. The $534,849 contract includes both a roadway and a 250-ft bridge over the Madison River.

Fifteen bids were entered for the job, only two of them above the engineers estimate. The high was 30% out of first place, but a slight 2% separated Baltrusch Construction Co.'s winning bid from the second low.

Roadway grading involves 440,000 cu yd of excavation. The base course requires the placing of some 195,000 tons of aggregates. The 250-ft bridge will have 50-ft prestressed concrete girders.

The contractor may elect to use light-weight concrete in the prestressed concrete girders; mix, design, and type of light-weight aggregate subject to approval of the engineer. The 28-day compressive strength of the concrete must not be less than 5,000 psi. Any additional costs occasioned by the use of lightweight concrete at the contractor's request, such as increased quantities, additional cement or any other cost shall be borne entirely by the contractor.

Minimum wages for heavy construction include: carpenters, $3.30/hr; cement masons, $3.35; structural ironworkers, $3.50; heavy duty drill operator, $3.18; crane operator, bridge & overpass construction, $3.27; asphalt raker, $2.70/hr; cement handlers (bulk), $2.70; general laborer, $2.54; riprapper, $2.70; elevating grader operator, $3.18; asphalt paving machine operator, $3.18; and combination truck and concrete mixer driver, 2½ cy or less, $2.76/hr.

The bidding included:

1C Baltrusch Constr. Co., Havre, Mont.	$534,849
2 C. H. Elle Constr. Co., Pocatello, Id	545,954
15 Rocky Mountain Constr. Co., Missoula, Mont.	694,548
EE Bureau of Pubic Roads	675,939

Bids: 8-17-60 Items	Unit	Quantity	Unit Prices 1C	2
Misc & extra work*	ls	job	$500.00	$500.00
Clear & grub	ls	job	1,000	16,000
Exc, unclassified	cy	410,000	0.25	0.23
for structures	cy	1,750	1.25	1.00
for bridge	cy	500	17.50	15.00
Overhaul A	stay	530,000	0.004	0.02
B	ymi	1,280	0.20	0.20
of borrow	ymi	4,500	0.20	0.20
Water	unit	10,000	1.00	1.50
Water plant, provide & maintain	ls	job	500.00	500.00
Rolling, pneu tired	hr	2,400	9.00	8.00
Rdwy, old, obliteration	unit	20	10.00	12.00
Aggregate base, crushed grading A	t	154,000	0.79	0.82
grading B	t	38,000	1.27	0.95
Bit preservative treat tp 2, blotter matr	t	3,400	4.00	4.00
asph gr MC-2	t	275	40.90	42.00
MC-5	t	205	40.90	42.00
Concrete, cl A	cy	492	86.00	100.00
prestressed, 50' str members	ea	20	1,555	1,100
Steel, reinforcement	lb	79,500	0.18	0.16
brl railing	lf	543	10.15	10.00
CMP galv, or equal, 18"	lf	590	5.00	4.00
24"	lf	3,800	7.00	6.30
36"	lf	120	14.00	12.30
Pipe stockpass, str-plate 5'10"x7'8", 10 gage	lf	654	60.00	58.00
12'8"x8'1", 8 gage	lf	206	80.00	85.00

Completion time: 230 working weather days
Liquidated damages: $150 per day

* Special work necessary in the correction of drainage or to prevent erosion or undermining of embankment or structures.

Problem: to increase production, yet lower costs
Solution: this Michigan and its 4½ yd bucket. Result:

12-yd trucks loaded in 1 minute

At the Vic Kirsch Construction Company pit near Hammond, Indiana, they are loading trucks in *one-half to one-third the time* it took before!

Loading *costs*, likewise, have been cut about in half!

Reason for this production-doubling, cost-cutting record is the big Model 275A Michigan Tractor Shovel shown here. This 22,000 lb lift capacity unit, equipped with a 4½ yd excavating bucket, *is doing more work than the TWO 2¼ yd crawler-loaders it replaced.*

Heaps 20 yds in 1¾ minutes

Teamed mostly with 12 yard dump trucks in this dune-area sand pit, the fast-moving Model 275A has established an average load cycle of only 60 to 80 seconds—*from first pass into the bank 'til loaded truck pulls away.* "On our busy days," reports company president Bob Turner, "we move 12-yard trucks out of our pit *at the rate of one per minute.*" Big 20-yard semis usually take 1¾ to 2 minutes (four or five passes) . . . 24-yard semis about 2½ minutes.

Also own matched Michigan Scraper, Michigan Dozer

From an operational point-of-view, the Model 275A Michigan Tractor Shovel has another advantage for a large contractor like Kirsch. The firm and its affiliate, Red Top Trucking Co, Hammond, also own a Michigan Tractor Dozer and a Michigan Tractor Scraper. All three units have *the same basic power train* (Clark torque converter, power-shift transmission, planetary wheel axles), *same engine* (262 hp), *same controls.* Thus, parts stocks are simplified, maintenance made easier — and, when Tractor Dozer and 19 yd Tractor Scraper are teamed on a typical Kirsch contract —be it million-dollar superhighway section or far smaller thousand-yard building site — matched power increases loading efficiency.

If you move dirt, we honestly believe *your* time will be well spent on a study of the big Michigans. Tractor Shovels, Dozers, Scrapers—all are now proved by years in the field. All are in regular production and readily available. See your local Michigan Distributor for details on performance . . . price . . . and delivery!

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Labor and Materials Prices — Monthly Market Quotations by ENR Field Reporters

HOURLY WAGE RATES—Base rate + fringe benefits

	Common Labor: Building	Common Labor: Heavy Const	Bricklayers	Carpenters	Struct. Iron Workers	Hoisting Engineers	Plasterers	Electrical Workers	Steamfitters	Truck drivers: 1½ T	Truck drivers: under 4 cy	Truck drivers: over 4 cy
Atlanta	$2.00	$2.00	$4.00	$3.35	$3.60+7¼¢	$3.675	$3.50+3¢	$4.00+5¢	$3.85+22½¢	$2.10	$2.20	$2.50
Baltimore	2.27+7½¢	2.27+7½¢	4.10+15¢R	3.60+7½¢	4.00+17¾¢	3.35/4.05+10¢A	3.85+10¢R	3.85+7½¢	3.84+175	2.20+07¢R	2.20+07¢R	2.20+07¢R
Birmingham	1.95	2.05	4.05	3.23	3.65+10¢	3.30	3.37	3.65	3.70+12¢	2.00	2.20	2.45
Boston	2.75+10¢	2.65+10¢	4.05+30¢	3.65+10¢	4.14+20¢	4.05+20¢	3.80+45¢	4.10+25¢	3.95+27¢	2.70+23¢	2.70+23¢	2.70+23¢
Chicago	3.02½+7½¢	3.02½+7½¢	4.225+10¢	3.91+20¢	4.35+16¢	3.90+5¢	4.00+27¢	4.30	4.10+25¢	2.68+214¢	.....	.....
Cincinnati	2.90	2.80	4.025+12¢	3.90	3.95+10¢	3.575/3.80A	3.875+.01	4.00+.511	4.10+9¾¢	2.65+62½¢	2.70+6½¢	2.75+6½¢
Cleveland	3.37	3.285	4.065+10¢	4.11	4.01+10¢	4.11	4.11	4.17	3.91+20¢	2.92+15¢	2.92+15¢	2.92+15¢
Dallas	1.85	1.85	4.15	3.50	3.55+7½¢	3.65	3.875+10¢	3.625+7½¢	3.70+8¼¢	1.80/2.625	1.80/2.625	1.80/2.625
Denver	2.32	2.32	4.00	3.65	3.71+10¢	3.25	3.80+12¢	4.05+47¢	3.95+10¢	2.40/2.60	2.75	2.90
Detroit	2.90+34¢	2.90+34¢	3.98+33¢	3.63+46¢	4.00+27½¢	3.63+39½¢	3.75+41¢	4.00+52¢	3.90+51¢	3.03+175¢	3.03+175¢	3.03+175¢
Kansas City	2.58	2.63	4.075	3.625	3.775	3.57	3.875	3.90+427¢	3.85+245¢	2.555	2.555	2.63
Los Angeles	3.08+10¢	3.08+10¢	4.20+25¢	3.825+20¢	4.27½+25½¢	3.81+20¢	4.25+42½¢	4.65+46¢	4.33+64¢	3.365+10¢	3.365+10¢	3.555+10¢
Minneapolis	2.85	2.98	3.875+15	3.50+15¢	3.62+15¢	3.60+33¢	3.65+33¢	3.70+44¢	3.62+37¢	2.85	2.85	3.00
New Orleans	1.92½	2.00	3.72½+7½¢	3.30	3.60+10¢	3.425+7½¢	3.34+5¢	4.00+7½¢	3.80+7½¢	3.425+7½¢	3.425+7½¢	3.375+7½¢
New York	3.55+28¢	3.55+28¢	5.00+61¢	4.65+37¢	4.95+69¢	4.90+39¢	4.70+67¢	4.40+1.96	4.65+60¢	3.275+28½¢R	3.275+28½¢	3.275+28½¢
Philadelphia	2.60+15¢	2.55+10¢	4.25+17¢	3.885+15¢	4.45+23¢	4.055+20¢/4.345+20¢A	4.15+20¢	4.52½+17¢	4.20+31½¢	2.45+15	2.45+15½¢	2.45+15
Pittsburgh	2.725+20¢	2.55+20¢	4.50+20¢	4.125+20¢	4.30+20¢	3.73+20¢	4.225+20¢	4.60+34½¢	4.20+20¢	2.59+20¢	2.635+20¢	2.735+20¢
St. Louis	2.925+10¢	2.925+10¢	4.25+33¢	3.875+10¢	3.875+10¢	4.00	4.00+07½¢	4.11+50¢	4.27½+25½¢	2.93+15¢	3.13+15¢	3.23+15¢
San Francisco	3.045+10¢	3.045+10¢	4.40+42½¢	3.725+36¢	4.275+25¢	3.80+35¢	3.79+63¢	4.22+29¢	4.36+72¢	3.79+11¢	3.27+11¢	3.08+11¢
Seattle	3.00+25¢	3.00 +25¢	4.15+30¢	3.53+20¢	3.76+10¢	3.84+20¢	3.72+30¢	3.95+27¢	4.14+29¢	3.40+20¢	3.40+20¢	3.60+20¢
Montreal	1.75+4¢	1.75+4¢	2.55+6¢	2.35+5¢	2.55+6¢	2.35+5¢	2.65+6¢	2.45+5¢	2.62+6¢s	1.75+4¢	1.75+4¢	1.75+4¢
Toronto	2.00+8¢	2.00+8¢	3.20+13¢	2.95+12¢	3.05+12¢	3.20+13¢	3.20+21¢	3.52+14¢	3.47+13¢	2.05+15¢	2.05+15¢	2.05+15¢

	Tractor Operators Incl. bulldozers: 34-49 hp	70-100 hp	100 & over	Tractor scraper 15-18 cy	Power cranes & shovels: ½ cy	¾ cy	Motor grader oper	Air comp oper	Air tool oper
Atlanta	$3.15	$3.15	$3.15	$3.15	$3.675	$3.675	$3.15	$2.825	$2.22
Baltimore	3.65+10¢	3.65+10¢	3.65+10¢	3.65+10¢	4.05+10¢	4.05+10¢	3.85+10¢	3.25+10¢	2.325+7½¢
Birmingham	3.30	3.30	3.30	3.30	3.30	3.30	3.30	2.89	2.15
Boston	3.52½+20¢	3.52½+20¢	3.52½+20¢	3.52½+20¢	3.90+20¢	3.90+20¢	3.52½+20¢	3.45+20¢	2.80+10¢
Chicago	3.65+5¢	3.80+5¢	3.85+5¢	3.85+5¢	4.25+5¢	4.25+5¢	3.85+5¢	3.70+5¢	3.85+5¢
Cincinnati	3.575+10¢	3.575+10¢	3.575+10¢	3.575+10¢	3.575+10¢	3.80+10¢	3.80+10¢	3.80+10¢	3.80+10¢
Cleveland	3.86	3.86	3.86	3.86	4.11	4.11	3.86	3.735	3.735
Dallas	1.80/2.625	1.80/2.625	1.80/2.625	1.80/2.625	3.375	3.375	1.80/2.625	2.00	2.00
Denver	2.50	3.10	3.10	3.10	3.25	3.25	3.10	3.10	2.60
Detroit	3.63+39½¢	3.63+39½¢	3.63+39½¢	3.63+39½¢	3.63+39½¢	3.63+39½¢	3.63+39½¢	3.37+395¢	3.03+34¢
Kansas City	2.875	3.325	3.325	3.325	3.57	3.57	3.325	3.395	2.675
Los Angeles	4.11+20¢	4.11+20¢	4.11+20¢	4.21+20¢	4.21+20¢	4.21+20¢	4.21+20¢	3.33+20¢	3.29+10¢
Minneapolis	3.36	3.60		3.60	3.82	4.08	3.36	3.25	3.15
New Orleans	3.42½+7½¢	3.42½+7½¢	3.42½+7½¢	3.42½+7½¢	3.42½+7½¢	3.42½+7½¢	3.42½+7½¢	2.72+7½¢	2.02½
New York	4.275+34¢	4.275+34¢	4.275+34¢	4.40+35¢	5.15+41¢	5.15+20¢	4.40+35¢	4.40+35¢	4.00+20¢
Philadelphia	3.63+10	3.63+20	3.775+20	3.90+20	4.345+20	4.345+20	3.765+20	3.51+20	2.55+10¢/2.60+15¢
Pittsburgh	3.72+20¢	3.72+20¢	3.72+20¢	3.72+20¢	3.92+20¢	3.92+20¢	3.92+20¢	3.43+20¢	2.60+20¢
St. Louis	4.00	4.00	4.00	4.00	4.00	4.00	4.00	3.45	3.45
San Francisco	4.01+35¢	4.01+35¢	4.01+35¢	4.14+35¢	4.31+35¢	4.31+35¢	4.21+35¢	3.48+35¢	3.475+10¢
Seattle	3.81+20¢	3.81+20¢	3.81+20¢	3.81+20¢	4.18+20¢	4.18+20¢	3.90+20¢	3.54+20¢	3.35+10¢
Montreal	1.95+4¢	2.18+5¢	2.18+5¢	2.18+5¢	2.45+5¢	2.45+5¢	2.18+5¢	2.05+5¢	2.05+5¢
Toronto	2.45+10¢	2.55+10¢	2.55+10¢	2.55+10¢	3.05+12¢	3.20+12¢	2.85+11¢	2.55+10¢	2.55+10¢

ENR Skilled Labor Average (Bricklayers, Carpenters, Iron Workers): $4.119, ENR Common Labor Average $2.765

Description of fringe benefits last appeared Sept. 22 1960. •A 1-2 drum. •R Revised

BUILDING BOARD & LATH AND INSULATION—DELIVERED TRUCKLOAD LOTS

	GYPSUM PLASTER BOARD tapered edge per Msq ft ½"	⅝"	GYPSUM BOARD LATH plain or perf per Msq ft ½" x 16" x 48"	GYPSUM SHEATHING tongue & groove per Msq ft ½" x 2' x 8'	FIBER BOARD SHEATHING asph impreg & coat per Msq ft sq ed	½" T&G	FIBER BOARD INSULATION sq edge, paint per Msq ft ½"	MINERAL WOOL INSULATION loose, per 40-lb bag a	3" batts per M sf	GLASS FIBER INSULATION loose, per 40-lb bag a	3" batts per M sf	ALUMINUM FOIL 80# Kraft 1 side foil per roll of 250 s. f.	Expansible Blanket 2 layers to fl per Msq ft
Atlanta	$62.50F	$52.50F	$40.00F	$62.50F	$72.00F	$127.00F	$75.00F	1.59z	$67.80F	$2.00	$80.00F	$4.77qi	
Baltimore	54.00	47.50	35.75	55.70	65.00	108.50	69.00	1.40F	67.50F	1.60F	47.00F	4.00F	$33.50F
Birmingham	63.00H	52.00H	47.77H	75.00H	67.50H	140.50H	83.50H	1.80	70.00	2.00	65.00	3.77gG	.....
Boston	60.00mH	50.00mH	35.00mH	55.00mH	65.00H	120.00H	79.00knH	1.40bH	75.00H	.....	75.00H	5.30rHS	53.50qH
Chicago	67.50	54.50	45.00	62.50	87.00	123.00	87.00	1.85	80.00	.....	63/65	5.25i	
Cincinnati	52.50wH	42.85wH	33.05wH	51.16wH	77.00wH	125.00wH	72.50wH	1.45wH	60.00wH	1.45wH	60.00wH	3.02jwJ	66.00wJ
Cleveland	62.00CF	56.50CF	39.00CF	65.00CF	80.00CF	129.00CF	80.00CF	1.35	75/80H	.....	67.00	14.00ioJ	55.00J
Dallas	56.25	46.85	42.50	56.25	68.75	118.00	68.75	2.00	70.00	1.75	70.67	5.00gAG	45.00
Denver	62.50H	51.50H	43.00H	67.00H	62.50H	103.50H	77.00	1.55b	65.00ub	2.00b	65.00a	5.25	48.65
Detroit	66.00K	56.00K	42.45K	66.00K	48.50DK	85.65DK	62.50DK	1.30b	52.00	1.85b	80.00	.....	.....
Kansas City	72.00H	62.00H	45.00H	.....	75.00H	122.00H	80.00H	1.40H	75.00H	1.80H	75.00H	3.60d	60.00
Los Angeles	Q 67.00F	60.50F	0.33zF	64.50F	75.00F	125.00F	80.00F	76.00BzF	83.00F	1.35z	64.00	4.65g	7.90V
Minneapolis	P 75.00F	65.00F	0.41zL	75.00F	95.00F	130.00F	78.00F	2.25yP	90.00F	2.10P	80.00F	4.25P	.....
Montreal	58.00M	49.30M	37/41.50M	53.00M	64.75M	.....	58.50M	1.50M	66.00M	1.50M	66.00M	9.00qM	56.00M
New Orleans	57.00H	52.00H	45.00H	60.00H	67.00H	140.00H	80.00H	3.00L	70.00*	.....	.....	.....	62.50U
New York	65.00H	55.00H	42.50H	60.00H	78.00	124.00	78.00	1.55b	68.50k	.....	.....	4.38iH	40.00zH
Philadelphia	H 54.00	45.00	36.50	52.50	65.00	115.00	65.00	1.20	50.00	1.40	50.00	2.90	83.50
Pittsburgh	74.00K	65.00K	40.00K	63.00K	60.00K	100.00K	60.00K	1.25zK	55.00K	1.25qK	55.00K	4.25iqK	38.50K
St. Louis	56.50-67.50HO	51-56.00HO	40.00HO	67.00HO	65-75HO	115/120HO	75/80.00HO	125/135	60-70HO	2.00PHO	67.00HO	4.39iqHO	.....
San Francisco	60.00F	49.00F	0.36zF	61.00F	70.00F	111.00F	69.00F	1.75F	66.50F	1.75F	66.50F	5.10	60.00F
Seattle	71.75K	59.50K	51.50K	70.00K	68.50K	125.00K	71.00K	1.25rK	58.00K	1.90*pK	51.00*IKh	4.25K	39.53EK
Toronto	49.50	37.25	41.50L	70.00	79.00T		88.00T	1.85	57.50		57.50	15.50o	46.00

•• F.o.b. warehouse. •a Semi thick. •b 30# bag. •c 3 layers of foil: $54.50. •d 40# kraft paper, 5 Msf, 100-500 rolls. •e 20# sq ft bag, 4" thick. •f Full trailer loads. •g 80# kraft paper backing 400 rolls or over. •h LCL. •i 40#. •j 80#. •k 2-in. •l 2". •m 8 to 10 ton quantities. •n Distributor's siding. •o Per Msf roll. •p 32# bag. •q 500 sf. •s 35# bag. •t 26# bag •u Flame proof $75. •v 5000 sf quantity. •w F.o.b. city. •x Sq. yd. •y 30# bag. •z Soun rock wool. •A 650 sf. •B ton. •C F.o.b. plant, freight allowed. •D CL. •E 10 Msf. •F less 2% disc. 10th. •G 1% of 10th, 10 days. •H 2% disc, 10 days. •J 1% disc, 10 days. •K less 2% for cash. •L 5% disc, 10th mo. •M fed. tax incl. •N 1% disc, 10 days. •O add 2% sales tax. •P 50 lb. bags. •Q add 4% sales tax. •R revised. •S 45 lb. •T less 2%, 30 days. •U lots of 2606 sq. ft. •V 250 sf roll.

MEXICO CITY WAGES & PRICES

WAGES, av per week, 8 hr day (pesos)a		Feb. '61
Common labor, building (peons)		101.50
	heavy const (peons)	136.50
Skilled labor,	carpenters 1 cl	210.00
	bricklayers 1 cl	245.00
	struct. ironworkers	315.00

•a 6 days work-extra day's pay

MATERIALS PRICES, F.o.b. City (pesos)		Feb. '61
Struct. steel shapes, fob Monterrey		
I-beams, 3 x 3 x 4"	per metric ton	1942.10
Reinf. steel, corrugated rods, per ton		
⅜"-½" x 11 meters consolidada		1925.00
¾"-1" x 11 meters		1800.00

		Feb. '61
Gravel, truckload, per cu meter		
Blue gravel		30.00
Cement, std. port. (Toltecs)	per metric ton	255.00
Lumber, 2" x 4" 1st class pine 20 ft	per M sq. ft.	2700.00
2" x 4" 2nd class pine	per M sq. ft.	2300.00

Materials Prices

Monthly Market Quotations By ENR Field Reporters

STRUCTURAL CLAY BUILDING TILE, BRICK AND LIME—DELIVERED

	STRUCTURAL CLAY TILE PARTITION—SCORED Per M. lots of 2,000 pieces or over, 3x12x12 in.	4x12x12 in.	8x12x12 in.	STRUCTURAL CLAY TILE—LOAD BEARING—SCORED Per M. lots of 2,000 pieces or over, 8x12x12 in.	10x12x12 in.	12x12x12 in.	BRICK Per M. in quantity, Common backing	Straight hard	LIME Per ton, in paper, Carload lot, Hydrated finishing	Common hydrated	Pulverized
Atlanta	$186.10*e	$154.95pkk*	$309.90*e	$348.65*e	.....	.....	$33.25uu	$33.25uu	$36.50kk	$28.50kk	$28.50kk
Baltimore	217.00	231.00	434.00	491.00	602.00	690.00	36.00	41.00	35.80	23.40	.....
Birmingham	135.00rss	152.00rss	.....	303.00p	376.00p	465.00p	27.00ff	38.00ii	38.28mm	20.87mm	36.33gmm
Boston	232.00†mm	248.00†mm	463.25†mm	556.00†mm	.....	.....	43.50p	58.00p	42.00$	34.00$	.....
Chicago	137.00ll	149.00ll	280.00ll	.....	.....	.....	32.00	34.00	1.00llaa	.90ollaa	.....
Cincinnati	179.00mmyy*	190.00§mm**	355.00jddmm	390.00§mm**	422.00§mm**	500.00§mm**	48.00§k	47.00§k	29.10§mm	29.10§mm	29.10§mm
Cleveland	205.00tt	219.00tt	.....	465.00tt	.....	709.00tt	43.25tt	47.25qqtt	32.75pft	24.00pft	.....
Dallas	162.00	162.00	318.75	387.00	472.50	585.00	30.00	51.00	43.58	25.32	28.00
Denver	170.00	185.00	310.00	310.00	390.00	442.00	35.00xx	54.00	48.00o	44.00p	46.00p
Detroit	257.00mm	274.00mm	514.00mm	582.00mm	767.00mm	876.00mm	53.50pmm	54.00pmm	38.00mm	30.00mm	40.00mm
Kansas City	158.00	158.00	312.00	312.00	400.00	500.00	34.00	34.00	36.26	34.26	29.76
Los Angeles	"	"	"	"	"	"	42.00uu	44.00	38.00mn‖	38.00mn‖	39.00mn‖
Minneapolis	218.00pe	225.00pe	452.00pe	225.00pee	.....	.....	49.50ype	58.00ype	50.00bbe	40.00bbe	57.00bbde
Montreal	168.78Ruqoo	180.93auqoo	325.00auqoo	220.00qoo	400.00qoo	.....	48.25bll	56.30bll	39.00	22.00	13.25
New Orleans	178.00	178.00	371.25	371.25	.....	.....	42.00	55.00	48.00p	40.00p	.....
New York	185.00h	197.00h	294.00ch	297.00hn	.....	.....	46.00p	.....	50.00p	44.00p	.....
Philadelphia	208.40ss	222.30ss	416.90sssz	517.30ss	.....	.....	40.00mm	45.00mm	40.00mmp	24.50	27.50
Pittsburgh	200.00t	213.00t	400.00t	453.00t	607.00t	693.00t	42.00t	40.00t	30.00t	26.00t	34.00t
St. Louis	180.00mmpp	190.00pp	380.00pp	410.00ppp	440.00pp	621.50pp	44.00mmpp	45.50pp	1.00aapp	.80aapp	1.35aapp
San Francisco	156.85*mm	177.10*mm	235.30dd*mm	159.40qqmm	.....	.....	43.00*mm	43.00*mm	29.24mm	29.24mm	31.74mm
Seattle	235.00pt	270.00pt	490.00pt	265.00pet	.....	.....	57.00t	71.00t	52.00bbt	38.00bbt	4.50mbbt
Toronto	169.00rr	185.50rr	360.00rr	281.50frr	405.00rr	.....	25.00rr	65.00rr	34.00mm	36.40mm	34.75mm

*§ F.o.b. yard. **F.o.b. plant Stockton. *† F.o.b. yard Roxbury. *s Smooth. *x dumped. *y Chi common. *z Pebble; 80 lb sack. *aa 80 lb sack. *bb LCL. *dd 8 x 12 x 12. *ff 80% common. *gg Smooth. *hh less 25¢ disc., cash. *ii F.o.b. plant. *jj rough; smooth; $40. *kk 3½ x 11½ x 11½. *ll less 2% disc. 10th. *mm less 2%, 10 days. *nn F.o.b., L. A. *oo less 2%, 30 days. *pp add 2% sales tax. *qq 8 x 5½ x 11½. *rr 2½% disc., 10 days. *ss 5% disc., 10 days. *tt less 2% disc., 15th. *uu less 50¢/M, 10 days *vv 4000 pcs. and over. *R revised.
*b $4.50 del. *c 8 x 12 x 12 in.-6 cell. *d Pulverized hot. *e less 5% disc., 10th., *f 8 x 8 x 12. *g Lumps, $26.72. *h F.o.b. trucks, job site N.Y.C. *i 60 lb sacks. *j Truck load or over. *k $1.00 discount per M, 10 days. *l Red face. *m Per bbl, 180 lb. processed. *n 7½ x 7½ x 12. *o Mason's double hydrated pressure. *p Truck lots. *q Provincial and Municipal tax extra (6%). *r Not used: earthquake danger. *s 8 x 16 x 12. *t less 2% disc., cash. *u Incl. Federal tax. *v Sand lime. *w 5 x 8 x 12.

PAINT, ROOFING—F. O. B. CARLOAD LOTS

	RED LEAD Per 100 lb. in 600 lb. (Approx.) bbl. F.O.B. Plant Dry a C	WHITE LEAD Per 100 lb. in 100 lb. cases In oil	READY-MIXED PAINT Per gal., drums Graphite b	Aluminum c	Ferric Oxide d	ROOFING SUPPLIES; Carload lots f.o.b. factory Rolls, slate surfaced, 85-90 lb. per sq.	Asphalt felt, per 100 lb.	Tar felt, per 100 lb.	Asphalt coating per gal.	Tar pitch 380 lb. bbl. per ton
Atlanta	$14.25qqJO	$24.00qqJ	$3.59	$3.90	$3.31	$2.90kk	$2.20kk	$2.85kk	$0.07kk	$65.35kk
Baltimore	17.50pp	24.00	3.00	4.40	3.50	3.06	3.67	4.04	.50	54.00
Birmingham	26.00†J	29.00†J	3.90J	3.40J	.....	2.95†mm	2.17††mm	3.17††mm	.76ffmm	48.00eemm
Boston	24.95†oomm	26.90†mmm	.....	.....	.....	3.55q	2.60o	3.04o	.55q	60.00g
Chicago	15.25rJqqpp	24.00†J	.....	.....	.....	3.45ukk	2.75ukk	3.15ukk	48.00bbkk	57.70†kk
Cincinnati	15.25†JO	24.00†J	.....	.....	.....	2.74mm	1.88mm	2.42mm	.56ymm	55.96Hmm
Cleveland	25.65†	26.90†	3.16qqP	3.27zzqq	4.20qqq	2.85q	2.10o	2.55o	.41q	49.00qq
Dallas	22.50	23.50M	.....	3.25B	.....	3.00u	3.00o	3.00o	.470	66.00kk
Denver	23.85n	24.00	3.70	3.10	3.70	2.94	2.25o	2.80o	.50ff	50.00
Detroit	15.75r	24.00rr	3.70mm	3.95mm	3.70mm	2.82mm	2.05ommll	2.42ommll	.56ffmm	49.00mm
Kansas City	26.90qqoo	25.65	3.99	3.43	3.01	3.00mm	2.50omm	2.50omm	.55y	.....
Los Angeles	16.25yy	22.00	3.30n	4.50n	4.20n	3.40nkk	2.40niikk	l	75nykk	l
Minneapolis	16.25N	21.50kk	.....	.....	.....	2.85kk	2.10hikk	2.55hikk	.52ikk	50.00rkk
Montreal	19.45O	26.00wtt	5.52Dff	6.55eff	5.10kff	5.40	4.65f	4.65f	1.60	4.40uu
New Orleans	23.00Jpp	24.00J	.....	.....	.....	2.78	1.98	2.85	.680	45.50
New York	14.75ooO	29.75	.....	.....	.....	2.99zz	2.20zzo	2.65o	.52s	49.00*
Philadelphia	14.75Omm	19.00mm	3.35mm	3.90mm	3.65mm	4.70	3.60	2.36	.74	49.00
Pittsburgh	21.50mqqJ	24.00J	2.20†FJ	2.25†FJ	2.25†GJ	2.90aH	2.15aH	2.15H	.56H	55.00H
St. Louis K	25.65†m	26.90	.....	.....	.....	2.95iimm	2.19hhK	2.64hhK	.44yK	55.33K
San Francisco	26.70mm	26.90mm	3.20mm	4.30mm	3.50mm	2.87mm	1.72aaimm	2.59mm	.46jj	54.00
Seattle	13.35HO	24.00H	.....	4.10ccffJ	.....	3.70qccH	3.06hccH	.....	.59cc	.....
Toronto	13.95	20.85	5.15J	6.18J	5.95J	3.50	2.75aae	2.75o	.70j	57.00A

*† Delivered. * Note: Red lead in oil 50% higher than white lead in oil. ** Aver. wt. approx. 425 to 550 lb drums. *a Red lead prices change frequently due to pig lead price changes. *b U.S. War Dept. Spec. 3-49A. *c ASTM Spec. D266-31. *d 80% minimum ferric oxide. *e Per 108 sf roll. *f Per 432 sq ft. *g F.o.b. yard Roxbury. *h Per roll, 65 lb. *i Net carload prices, Minneapolis and vicinity. *j 45 gal containers. *k Over 80% ferric oxide. *l Not used. *m 100 lb. keg. *n F.o.b. city. *o Per 60 lb roll. *p 5-drum, 50 gal each. *q Per 90-lb roll. *r F.o.b. factory, Chicago. *s Truckload. *t Incl. Federal tax. *u Per 90-lb square. *v Per ton. *x Ready-mixed. *y 55-gal container. *z Drums. *aa 15 lb. *bb Roofers coating and cement. *cc LCL, truck delivery. *ee Asphalt pitch in 100 lb package *ff 5-gal drums. *gg F.o.b. factory. *hh Incl. freight. *ii Per 324 sf roll. *jj Asbestos roof coating. *kk less 2% disc., 10th. *mm less 2% disc., 10 days. *oo 100 lb bbls. *pp 50 or 100 lb bags. *qq 500 lbs or more *rr F.o.b. plant, Detroit. *ss 50 lb bbls. *tt 25 lb kegs. *uu 250 lb bbls. *xx Sept.: Rolls revised to $2.75, Asph. Felt revised to 1.71. *yy Sept. revised to $12.00. *zz Sept. revised to $2.80. *A 400 lb barrels. *B ASTM Spec. D962-49. *C 95%. *D Std. black. *E Milit. spec.: FTTP27; FTTY61; GTTP31. *H less 2% disc., cash. *I Per 100 lb. *J less 1% disc., 10 days. *K add 2% sales tax. *L LCL. *M 1 ton or more. *N under 500 lbs, add $1. *O 50 lb. bag.

PLASTER, VERMICULITE AND METAL BUILDING SHEETS & TUBING

	PLASTER† Neat per ton	Gauging per ton	VERMICULITE† Home Insulation pellets	Plaster aggregate	Concrete Aggregate treated	PERLITE† Plaster Aggregate	Concrete Aggregate Untreated	ALUMINUM SHEET† Flat .100" th 36"x108" & 48"x144" per lb‡	Corr roof .032" th 35"x12' per shu	STAINLESS STEEL† SHEET-TYPE 302g 20 ga 48"x96"-120" per cwthh	28 ga 36"x120" per cwtmm	COPPER WATER* TUBING-TYPE L 2000 ft lots per ft ⅜ b	½ c
			per bag of 4 cu ft										
Atlanta	$30.00ss	$45.00ss	$1.65sss	$1.65sss	$1.85sss	$1.65sss	$1.65sss	$0.469nnoo	$27.61nY	$65.44nxx	$72.69nxx	$0.1510ss	$0.1700ss
Baltimore	24.00	35.70	0.95	1.15	1.15	1.15	1.55	0.462	0.451r	63.00	71.25	0.1600	0.2300
Birmingham	37.00ss	43.00ss	1.55ss	1.55ss	1.60ss	1.27ss	1.27iss	0.459M	9.35K	64.50K	73.00K	0.1700ss	0.1900ss
Boston	25.00	30.00	1.40	1.40	1.40	1.55ss	1.55ss	0.474	25.07pAA	64.42dd*zz	72.67dd	0.1480ss	0.1670ss
Chicago	1.45bbtt	1.45bbtt	1.55	1.60	1.60	1.60	1.60	0.564x	33.43p	64.15ee	72.40ee	0.1510	0.1700
Cincinnati	23.85*ss	23.85*	1.75*ss	1.75*ss	1.85*ss	1.85ss	1.90ss	0.514	9.21	61.00xx	71.25zx	0.1680ss	0.1900ss
Cleveland	29.00N	45.00N	1.14ss	1.16ss	1.24ss	1.45ss	1.45ss	0.459aa	25.07p	63.33oozz	71.58oozx	0.1480	0.1670
Dallas	34.50	34.50	1.05	1.21	1.37	1.21	1.32	0.469	0.484r	64.09	72.34	0.1668	0.1986
Denver	29.00	29.00	1.63	1.40	1.50t	1.50ss	1.60ss	0.479	10.89	65.32qq	73.57qq	0.1670	0.2345
Detroit	28.00ss	28.00ss	1.27ss	1.31ss	1.40ss	1.45kss	1.50kss	0.475a	10.35a	63.00azz*	71.25azz*	0.1588	0.2210
Kansas City	30.00	35.00	1.19E	1.21E	1.29E	1.21	.....	0.463	24.66qqvvp	67.50E	76.25E	0.1310	0.1500
Los Angeles	28.00ff	29.00tt	1.25kff	1.20kff	1.45tt	1.16	1.26	0.459	8.77Z	65.02	73.27	0.1330	0.2345
Minneapolis	35.00F	35.00F	1.65ss	1.80F	1.95Fl	1.40S	1.50S	0.469	10.09	63.61GE	69.61ffG	0.1680	0.1900
Montreal	22.60A	35.60A	1.25A	1.40A	1.60A	1.15s	1.15s	43.95AH	12.10H	65.75H	.....	0.2089BB	0.2450BB
New Orleans	34.00	48.00	1.32P	1.23P	1.40P	1.15P	1.15P	0.469	33.43	63.00Y	72.00Y	0.2058	0.2887
New York	29.00	35.00	1.30	1.35	1.45l	1.35	1.40	0.489aT	0.2507aXAA	64.08a	73.33a	0.1480	0.1670
Philadelphia	26.25	33.00ss	1.40ss	1.25ss	1.45ss	1.05ss	1.05qqss	0.479	10.98	63.71	71.98	0.1510	0.1700
Pittsburgh	30.00nn	31.00nn	1.25nn	1.30nn	1.40nn	1.40nn	1.40nn	0.475	10.39	63.00	74.50pp	0.1600	0.1800
St. Louis uu	30.00uu	42.00uu	1.80uu	1.60uu	1.65uu	1.50uu	1.60uuY	0.479	9.18	63.39Kmmgg	71.64yuugg	0.1680fmss	0.1670fmss
San Francisco	29.50ss	30.50ss	1.38ss	1.38ss	1.50ss	1.38ss	1.58ss	0.575	10.83	65.00K	77.25K	0.1723	0.2418
Seattle	42.40ss	45.60mm	1.55ss	1.35kmm	1.85ss	1.50k	.....	0.50D	10.75D	54.02D	73.27D	0.1680	0.1670
Toronto	.70	1.25	1.47	1.43	1.75	1.14Q	.....	0.437	26.00ap	73.74	86.52	0.3063	0.3418

‡trucklots, delivered †fob warehouse *fob city *a delivered *b ½" O.D. *c ⅝" O.D. *d per sf *e#34" x 60" sheet *f per 100 ft *g 5 tons & up; cold roll, anneal & pickled 2B finish *h incl. Federal tax *i add 25¢ for pint of additive *j 1100 & 3003 alloy, mill finish *k bag of 3 cu ft *l not treated with air entraining agent *m 2-10M ft *n fob mill fr equalized with nearest stocking competitor *o 250 sacks or more *p 100 sq ft *r per lb *s 30 lb bag *t 36" x 108";-10.81 lb/sh; 48" x 144"; 21.7 lb/sh *u 19.31 lb/sh *v fob plant *w 48" x 144" *x 0.11*lb *y 22 gauge *aa 16M lb & up *bb Per 50 lb bag *dd add $1.00 cwt boxing; $0.75/cwt on skids *ee 4 tons & up *gg add $2/cwt boxing; $0.75/cwt on skids *hh Theoretical wt for 48" x 96"; 60.4-lb. per sh *ii 300-bag lots *jj 100-lb bag *mm Theoretical wt; 19.7-lb per sh *nn 2% cash *oo skid packed *pp type 304 *qq Philadelphia and suburbs. *rr less 2% disc. 15 days. *ss less 2% disc. 10 days. *tt less 2% disc. 10th. *uu add 2% sales tax. *vv Type N. *xx less ½% disc. 10 days. *yy .021 ga. *zz .061" th. *A Per 100 lb. *C 15M lb. *D less ½% for cash. *E Quantity differential. *F less 8% disc. 10th. *G less ½% disc. 10th. *H Fed. tax exempt. *K less ½%, 10 days. *L 5% disc. 30 days. *M 3003: .452 for 1100. *N less 2%, 15th mo. *O less $2, cash & carry. *P less 2%, 15 days. *Q per ton. *R revised *S add .10/bag under 200 bags. *T 5000# quantity on 4000# skids. *U 30 Msf quantity; $0.245 in 10 Msf quantity. *X per sq ft. *Y Per sheet. *Z 6,000 lb or over. *AA 30,000 sf or over. *BB Type K

Bids Asked—Low Bidders—Contracts Awarded—

NEW ENGLAND

BUILDINGS—BA

▲† **Mass., Chicopee Falls**—BA 3/16—Base Procurement Office, Westover Air Force Base, Chicopee Falls, 180 units Capehart HOUSING, Westover Air Force Base, IFB 19-617-61-42. $2,800,000. Pederson & Tilney, 8 Newbury St., Cambridge, archts. CD 2/3/61, under LB.

HEAVY CONSTRUCTION—LB & CA

▲ **CONNECTICUT**—State Highway Comr., 170 Douglas St., Hartford, ROAD,
White Oak Excavators, Inc., 61 East Main St., Plainville, Conn., CA **$5,010,104,** 13,683 lin. ft. c. conc. pavement on Interstate Rte. 91, incl. 8 bridge structures, Proj. 118-68, Federal Aid Proj. I-IG-91-29331, Wethersfield, BA 1/3/61, CA 2/17/61. CD 1/11/61, under LB.

MIDDLE ATLANTIC

BUILDINGS—BA

▲ **N. J., New Brunswick**—BA 3/8—Office of Vice President and Treasurer, Rm. 101, Queens Bldg., Rutgers, State University, New Brunswick, Contr. No. 1-general construction work; Contr. No. 2-greenhouse work; Contr. No. 3-heating work; Contr. No. 4-plumbing work; Contr. No. 5-electrical work, GAMMA GREENHOUSE, Rutgers, State University. Plans deposit $50. Woerner & Woerner, The Feher Bldg., 103 Bayard St., archts. CD 10/1/45.

▲ **N. Y., New York**—BA 3/14—Deputy Supt. Schools, Bureau Constr., 42-15 Crescent St., Long Island City, general constr., plumbing and drainage, heating and ventilating, electrical work and lighting fixtures PUBLIC SCHOOL 29, Courtlandt Ave. between E. 156 and 157 Sts., Bronx Boro. $2,800,000. Plans deposit $25 general, $10 mechanical trades. CD 12/19/60.

▲ **N. Y., New York**—BA 3/16—Deputy Supt. Schools, Bureau Constr., 42-15 Crescent St., Long Island City, general constr., plumbing and drainage, heating and ventilating, electrical work and lighting fixtures PUBLIC SCHOOL 74, 115 St. and 3 Ave., Manhattan Boro. $2,500,000. Plans deposit $25 general, $10. mechanical trades. CD 12/29/60 under LB.

HEAVY CONSTRUCTION—LB & CA

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., Albany, ROAD,
Hendrickson Bros., Inc., 63 N. Central Ave., Valley Stream, N. Y., CA **$5,817,101,** 9 in. cem. conc. pavt. 2-24 ft. 7.23 mi., misc. work 0.18 mi., acc. 9 in. cem. conc. 15 ft and var. 1.4 mi. b. conc. 10.34 mi., 8 H. G. seps. comp. steel beam, 1-3 spans 99 ft; 6-4 spans 236 ft., 206 ft., 229 ft., 223 ft., 210 ft., 216 ft., 1-4 span twin 281 ft. and 273 mi. Sunrise Hy. extension Upton Blvd. to Eastport Manor Rd., FASH 61-1, Proj. F-947(24), Suffolk Co. BA 1/26, CA 2/14. CD 1/27/61, under LB.

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., Albany, Bids opened 2/23, (BRIDGE),
N. Y.—**Wm. M. Moore Bldg. Corp. & Lopier Constr. Corp.,** 360 Lexington Ave., New York 17, N. Y., LB **$2,760,000,** (2 bidders), bridge substructure comprising 2 abutments and 26 piers, 4,232.7 ft. total, Fire Island Inlet Bridge (Captree State Park to Fire Island State Park), Contr. 1, FIIB 61-1, Suffolk Co. CD 1/24.

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., Albany, Bids opened 2/23, (ROADS),
N. Y.—**L. G. DeFelice & Son, Inc.,** Nettleton Ave., North Haven, Conn., LB **$4,118,504.47,** est. $6,679,-000, (9 bidders), b. conc. Type 1A, 8.96 mi., b. conc. Type 1A (access) 3.44 mi., misc. work 0.12 mi. HGSS twin 3 sp. prestressed conc. bridge, 2 sps. 24.7 ft., 2 sps. 41.6 ft., 2 sps. 39.2 ft., H.G.S. twin, 3 sps. prestressed conc. br. 2 sps. 41.2 ft., 2 sps. 42.4 ft., 2 sps. 42.3 ft., twin 2 sp. comp. WF beam Br. 4 sps. 57 ft. prestressed conc. Br. 5 sps. 254.7 ft. total, R.R.G.S. twin 3 sp. comp. WF Br. 6 sps. 82.1 ft. prestressed conc. Br. 5 sps. 295.4 ft. total Interstate Rte. 502, Sections A3, 7A4, 7A5, Rte. 22 to Salmon River Rd. Rte. 87, FISH 61 5 Proj. I-IG-87-4(11), Clinton Co.;
N. Y.—**The Lane Constr. Corp.,** Meriden, Conn., LB **$3,673,743.95,** est. $4,375,000, (7 bidders), 9 in. c. conc. pavt. 2.88 mi., b. conc. Type 1A, 0.04 mi., misc. work 0.16 mi. acc. 4.15 mi., c. conc. pavt. 0.86 mi. 8 H.G.S. Comp. I-beam, 4 sps. 186.8 ft. total, 4 sps. 186.8 ft. total, 3 sps. 179 ft. total, 3 sps. 171 ft. total, 3 sps. 195.8 ft. total, 3 sps. 133.5 ft. total, 3 sps. 159.7 ft. total, 3 sps. 202.3 ft. total, Interstate Rte. Connection 580 Rochester Western Expressway (Buffalo Rd. to Howard Rd.) Elm Grove Rd. connection, Rte. 490, FISH 61-6, FASH 61-7, Proj. I-IG-490-2(21); U-783(6), Monroe Co.;
N. Y.—**Hendrickson Bros., Inc.,** 63 N. Central Ave., Valley Stream, N. Y., LB **$4,926,213,** est. $6,001,-000, (6 bidders), 9 in. conc. pavt. 3.09 mi., misc. work 0.2 mi., acc. 1.9 mi. c. conc. pavt. and 1.68 mi. b. conc. pavt. 5 HGS comp. WF beam, 2 sps. 142.2 ft. total, 2 sps. 146.5 ft. total, 2 sps. 115.2 ft. total, 1 sp. 76.3 ft. total, 1 sp. 57.8 ft. total, 2 RGS steel girder 2 sps. 138 ft. total, 1 sp. 104 ft. Wantagh Oyster Bay Expressway, Contr. 2, Hempstead Turnpike Old Country Rd. FAWOBE 61-1, Proj. U-UG-1110 (3), Nassau Co.;
N. Y.—**Rusciano Constr. Corp. & Del Balso Constr. Corp.,** 2 Penn Pl., Pelham Manor, N. Y., LB **$3,994,-233,** est. $4,852,000, (9 bidders), 9 in. c. conc. pavt. 2.54 mi., misc. work 0.21 mi. acc. 2.26 mi., 2 HGS comp. gird. 3 sps. 184.81 ft. total, 4 sps. 238.86 ft. total, ped. overpass 1-beam, 4 sps. 213.92 ft. total Croton River-Peekskill, SH 657, Croton-on-Hudson, Village, Riverside Ave. Rte. 9 FARC 61-16, SH 1207, Westchester Co. CD 1/24.

▲ **Grove, Shepherd, Wilson & Kruge, Inc.,** 400 Madison Ave., New York 17, N. Y. and **MacLean-Grove & Co., Inc.,** 400 Madison Ave., New York 17, N. Y., CA **$9,770,000,** constr. part RAPID TRANSIT RAILROAD, Section No. 12, Route No. 101, Manhattan Boro, NEW YORK, N. Y. New York City Transit Auth., Rm. 1310, 370 Jay St., Brooklyn 1, N. Y. BA 2/3, CA 2/21. CD 2/7/61, under LB.

BUILDINGS—LB & CA

▲ **Joseph P. Blitz, Inc.,** 545 Madison Ave., New York 22, N. Y., CA **$5,066,000,** fdns. and general contract James Madison HOUSES, Proj. No. NY-5-33, E. 110 St., Park Ave., E. 109 St. and Madison Ave. and E. 108 St., Park Ave., E. 107 St. and Madison Ave., Manhattan Boro, NEW YORK, N. Y. New York City Housing Auth., Rm. 312, 299 Broadway, New York 7, N. Y. BA 1/31, CA 2/8 Grand total $6,338,800. CD 2/2/61, under LB;
H. Sand & Co., 11 Park P., New York, N. Y., CA **$549,700** heating and ventilating James Madison HOUSES, Manhattan Boro, (New York, N. Y.);
Endres Plumbing Corp., 31-65 29 St., Long Island City 6, N. Y., CA **$723,100,** plumbing, James Madison HOUSES, Manhattan Boro (New York, N. Y.).

▲ **Fisher Brothers,** 6 E. 45 St., New York, 17, N. Y., Owner Builds, **$22,000,000,** 44 story OFFICE, east of 3 Ave. between E. 39 and E. 40 Sts., NEW YORK, N. Y. Shreve, Lamb & Harmon, 11 W. 44 St. New York 36, N. Y., assoc. archts. CD 10/21/60.
Bethlehem Steel Co., 25 Broadway, New York 4, N. Y., CA structural steel for OFFICE (New York, N. Y.).

▲ **Rudin Management Corp.,** 415 Madison Ave., New York 17, N. Y., CA Est. **$4,000,000,** 21 story, 142 x 167 ft., OFFICE, east side Whitehall St. between Bridge and Stone Sts., NEW YORK, N. Y. 1 Whitehall St. Corp., 415 Madison Ave., New York 17, N. Y. James Ruderman, 32 Union Square, New York 3, N. Y., structural engr. Rutherford Stinard, 801 2nd Ave., New York 17, N. Y., mechanical engr. Alfred Kleinberger, 551 5th Ave., New York 17, N. Y., electrical engr. CD 2/17/61.

▲ **Wilaka Constr. Co., Inc.,** 11 E. 44 St., New York 17, N. Y., LB **$3,668,000,** (8 bidders), Proj. NY 5-48B fdns. and general contract E. Robert Moore HOUSES, E. 149 St., Jackson Ave., E. 147 St., Trinity Ave. and St. Mary's Park, Bronx Boro, NEW YORK, N. Y. New York City Housing Auth., Rm. 312, 299 Broadway, New York 7, N. Y. BA 2/21. CD 2/15/61;
Paramount Plumbing & Heating Co., 336 E. 92 St., New York 28, N. Y., LB **$598,750,** (7 bidders), plumbing E. Robert Moore HOUSES (New York, N. Y.).

▲ **Aluminum Ltd.,** 420 Lexington Ave., New York 17, N. Y., Bridgeport Brass Co., 30 Grand St., Bridgeport, Conn., Cerro de Pasco Corp., 300 Park Ave., New York 22, N. Y., Scovill Mfg. Co., 161 E. 42nd St., New York 17, N. Y., Owners Build, **$30,000,000,** ALUMINUM HOT ROLLING MILL, OSWEGO, N. Y.

▲ **Eugene Amron, Inc.,** R.D. No. 1, Bricktown, N. J., Owner Builds, **$3,410,000,** 310-unit RESIDENTIAL DEVELOPMENT, Brick Twp., LAURELTON, N. J. Harsen & Johns, 60 Westerwelt Ave., Tenafly, N. J., archt.

▲ **Cutler Homes, Inc.,** 1615 W. Chelten Ave., Phila., Pa., Owner Builds, **$3,000,000,** RESIDENTIAL DEVELOPMENT (300) PHILA., PA.

▲ **John A. Volpe Constr. Co.,** 1507 M St. N.W., Wash., D. C., CA **$6,239,000,** Holy Cross HOSPITAL, SILVER SPRING, MD. Sisters of the Holy Cross, Eastern Ave. and Bunker Hill Rd. N.E., Wash., D. C. Congiver, Krassa & Webb, 1115 17th St. N.W., Wash., D. C., engrs. BA 1/17/61. CD 1/26/61, under LB.

SOUTH

HEAVY CONSTRUCTION—LB & CA

▲† **Al Johnson Constr. Co.,** 608 Foshay Tower, Minneapolis 2, Minn., and **Peter Kiewit Sons Co.,** 1024 Omaha National Bank Bldg., Omaha, Neb., LB **$19,-888,888** DAM and LOCK EMERGENCY GATES, concrete dam consist. weir, sill, stilling basin, 13 concrete piers, twelve 100 ft. long steel tainter gates and operating machinery, access bldg., crane bridge, four upstream emergency bulkheads, upstream bulkhead crane with auxiliary crane and lifting beam, etc. Captain Anthony Meldahl Locks and Dam, Ohio River, Bracken Co., Ky. about 1.7 mi. below Chilo, O., CIVENG 46-022-61-34, KENTUCKY and OHIO. U. S. Eng., 237 4 Ave., Huntington 18, W. Va. BA 2/16. CD 12/7/60.

▲ **LOUISIANA**—State Dpt. Hys., Rm. 426, Headquarters Admin. Bldg., Baton Rouge, ROAD,
Hall & Holland, Inc., Box 38, Montgomery, La., CA **$4,314,643,** shaping roadway, c. conc. pavt. 13.903 mi. Jennings-Crowley Ry., Rte. I-10, SP Nos. 450-03-09 and 450 04-10, FAP Nos. I-10-1(42)65 and I-10-2(6)66, Jefferson Davis and Acadia Parishes. BA 1/25. CA 2/3. CD 1/30/61, under LB.

BUILDINGS—LB & CA

▲ **Bush Constr. Co., Inc.,** Flat Iron Bldg., Norfolk, Va., LB **$3,313,082** (7 bidders), 223 unit Capehart Family HOUSING, improvements, utilities, ENG-44-110-61-14, FORT EUSTIS, VA. U. S. Eng., foot of Front St., Norfolk, Va. Mills, Petticord & Mills, Franklin Bldg., Norfolk, Va., archts. C. Warren Bogan & Assocs., Franklin Bldg., Norfolk, Va., mech. engrs. BA 2/16/61. CD 1/17/61.

▲ **John Volpe Constr. Co.,** 4333 NW 7th Ave., Miami, Fla., LB **$3,565,000,** Base Bid, (10 bidders), HOSPITAL ADDN., ALTERATIONS, 3501 Johnson St., HOLLYWOOD, FLA. South Broward District Memorial Hospital, 3501 Johnson St., Hollywood, Fla. BA 2/16/61. CD 12/21/60.

▲ **United Engineers & Constructors, Inc.,** 1401 Arch St., Phila., Pa., CA design and construct CHEMICAL PLANTS to convert hydro carbons to chemical products, GEISMAR, LA. Monochem, Inc. (Borden Co., 350 Madison Ave. and United States Rubber Co., 1230 Aveneu of Americas, New York, N. Y.). Est. **$30,000,000.** CD 11/30/60.
Chemical Construction Corp., 525 W. 43 St., New York 36, N. Y., CA oxygen-acetylene work for CHEMICAL PLANTS (Geismar, La.).

MIDDLE WEST

BUILDINGS—BA

▲ **Wis., Milwaukee**—BA 4/12—Wisconsin State Public Bldg. Corp., State Capitol, Madison, District STATE OFFICE, $6,800,000. Plans deposit $100. Extended date. Grellinger & Rose & Assocs., 757 N. Broadway, Zone 2, archt., R. D. Culbertson, state engr. CD 2/14/61.

▲ **Wis., Madison**—BA 4/20—Wisconsin State Public Bldg. Corp., Capitol Bldg., Madison, Hill Farms STATE OFFICE. $14,000,000. Plans deposit $100. Extended date. Grassold-Johnson & Assocs., 734 N. Jefferson St., Milwaukee, Zone 2, archts. R. D. Culbertson, state engr. CD 2/8/61.

HEAVY CONSTRUCTION—LB & CA

▲ **Hunkin Conkey Constr. Co.,** 1740 E. 12th St., Cleveland 14, O., CA **$2,836,012,** Rocky River SEWAGE PLANT ADDN., Rocky River, CLEVELAND, O. Bd. Comrs. Cuyahoga Co., County Admin. Bldg., 1219 Ontario St., Cleveland 13, O. Willard Schade & Assocs., Chester-12th Bldg., Cleveland 14, O., engrs. BA 12/15. CA 2/9/61. CD 12/27/61, under LB.

BUILDINGS—LB & CA

▲ **Willow-Shore Builders,** 5416 Mayfield Rd., Cleveland 24, O., Owner Builds, **$4,750,000,** 170 Richmond Park Estates HOMES, off Highland Rd., RICHMOND HEIGHTS, O. Louis J. Rotman, 31715 Vine St., Wickliffe, O., archt.

▲ **Huber, Hunt & Nichols, Inc.,** 2450 S. Tibbs St., Indianapolis, Ind., CA Total est. **$3,500,000,** 178,250 sq. ft. DISTRIBUTION CENTER, 200 car parking lot, Franklin Rd., south of E. 30th Sts., INDIANAPOLIS, IND. Western Electric Co., Inc., 2525 Shadeland St., Indianapolis, Ind. CD 10/19/59.

▲ **Hoffman Co., Inc.,** 1519 N. Oneida St., Appleton, Wis., CA Est. **$3,850,000** HOSPITAL ADDN., NEENAH, WIS. Theda Clark Memorial Hospital, 215 Lincoln St., Neenah, Wis. BA 1/24/61, CA 2/13/61. CD 12/20/60.

MISSISSIPPI TO ROCKIES

HEAVY CONSTRUCTION—BA

▲† **New Mexico**—BA 3/28—U. S. Eng., P.O. Box 1538, Albuquerque, Two Rivers RESERVOIR PROJECT, Chaves Co., Rio Hondo, Roswell, ENG-29-005-61-9. $5,500,-000. Extended date. CD 2/15/61.

HEAVY CONSTRUCTION—LB & CA

▲ **Jelco, Inc.,** 1919 W.N. Temple St., Salt Lake City, Utah, and **Union Power Constr. Co.,** 950 W. Louisiana Ave., Denver, Colo., CA **$3,500,000,** 57 mi. high voltage TRANSMISSION LINE and 53 mi. TRANSMISSION LINE Casper to Riverton, WYOMING. Pacific Power & Light Co., 421 S. Center St., Casper, Wyo.

BUILDINGS—LB & CA

▲ **Southern Builders, Inc.,** 3355 Poplar, Memphis, Tenn., CA. PLANT to produce 100 tons medium density wood shavings board daily, (plant contract), CROSSETT, ARK. The Crossett Co., Crossett Ark. Ford, Bacon & Davis, Inc., 2 Broadway, New York, N. Y., engrs. Total est. **$6,000,000.** CD 3/8/60.
Construction Engineering Co., 9237 Mansfield, Rd., Shreveport, La., CA medium density wood shavings board PLANT, (woodyard contract), (Crossett, Ark.).

▲ **Peter Kiewit Sons' Co.,** 1024 Omaha National Bank Bldg., Omaha, Neb., CA Est. **$6,000,000,** Schimmel Indian Hills INN, swimming pool, etc., at 84th and Dodge, OMAHA, NEB. Barton H. and Michael J. Ford, 112 N. 40th St., Omaha, Neb. BA 10/13/61. CD 9/16/60.

▲† **Sletten Constr. Co.**, 1301 10th Ave. N., and **William M. Kessner, Inc.**, North of Great Falls, both Great Falls, Mont., CA $4,916,114, 300 unit Capeart HOUSNG, Malmstrom Air Force Base, GREAT FALLS, MONT. Base Procurement Office, Malmstrom Air Force Base, Great Fall, Mont. CA 1/26/61, CA About 2/15/61. CD 2/2/61, under LB.

▲ **Bechtel Corp.**, 220 Bush St., San Francisco, Calif., CA Est. $34,000,000, 150,000 kw STEAM POWER PLANT, KEMMERER, WYO. Utah Power & Light Co., P.O. Box 899, 1407 W. North Temple St., Salt Lake City 10, Utah. CD 2/17/58.

FAR WEST

HEAVY CONSTRUCTION—LB & CA

▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St., Los Angeles, ROAD,
Frederickson & Watson Constr. Co. and Charles McCloskey Co., 873 81 Ave., Oakland, Calif., CA $6,506,432, grading, paving to constr. 3.1 mi. 4-6 lane freeway, Ventura Freeway, U. S. Hy. 101 and 1.1 mi. 4 lane freeway, Oaji Freeway, US Hy. 399 incl. major interchange, Ventura Co. BA 1/26. CD 1/31/61, under LB.

▲ **CALIFORNIA**—State Div. Hys., 1120 N. St., Sacramento, ROAD,
Wunderlich Co., P. O. Box 359, Palo Alto, Calif., CA $4,335,105, grading, paving to constr. 4 mi. 6-lane freeway, US 40 between 1 mi. south and 3 mi. north State Sign Rte. Hy. 48, northeast of Vallejo, Solano Co. BA 2/8/61. CD 2/13/61, under LB.

BUILDINGS—LB & CA

▲ **Rust Engineering Co.**, 930 Fort Duquesne Blvd., Pittsburgh 22, Pa., CA MATERIALS HANDLING SYSTEM, (First Phase), GARFIELD, UTAH. Kennecott Copper Corp., Utah Copper Div., Kearns Bldg., Salt Lake City, Utah. CD 8/7/59.

CANADA

HEAVY CONSTRUCTION—LB & CA

▲ **Northern Constr. Co. & J. W. Stewart Ltd.**, 1304 Hornby St., Vancouver, B. C., CA $28,940,930, Grand Rapids GENERATING STATION, Grand Rapids, MANITOBA. Manitoba Hydro-Electric Bd., P.O. Box 815, Winnipeg, Man. BA 1/24/61. CD 12/28/60.

BUILDINGS—LB & CA

▲ **Perini, Ltd.**, 150 Kent St., Ottawa, Ont., LB $5,088,000, West Block PARLIAMENT HILL ADDNS., OTTAWA, ONT. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont. BA 2/15/61. CD 1/31/61.

LATIN AMERICA

HEAVY CONSTRUCTION—BA

▲ **Argentina**—BA 3/31—Ministerio de Economia de la Provincia de Tucuman, Tucuman, El Cadillal DAM and complimentary works. $16,900,000.

BUILDINGS—LB & CA

▲ **Raymond Concrete Pile of South America (subdidiary Raymond International, Inc.**, 140 Cedar St., New York, N. Y., U.S.A.), CA Est. $4,600,000, 33,000 kw ZIPAQUIRA THERMAL ELECTRIC PLANT, BOGOTA, COLOMBIA. Empresas de Energia Electrica de Bogota, Apartado Aereo No. 4453, Bogota, Colombia. J. G. White Engineering Corp., 80 Broad St., New York, N. Y., U.S.A., engrs. CD 7/12/60.

FOREIGN

BUILDINGS—LB & CA

▲ **Blaw-Knox Co.**, 300 6 St., Pittsburgh, Pa., U. S. A., CA Est. $3,300,000, design and construct polyvinyl chloride resin and by-product caustic soda and chlorine PLANT ADDN., SEOUL, KOREA, Puk Sam Chemical Industry Co. Ltd., 198/1 Kwan Hun Dong, Zong-Noh, Seoul, Korea.

PROPOSED PROJECTS

WATER SUPPLY

▲ **Colo., Pueblo**—City, City Hall, WATER SYSTEM IMPRVS., $6,000,000.

SEWERS, WASTE DISPOSAL

▲ **Calif., San Jose**—City, City Hall, voted $22,600,000 bonds Feb. 7, SEWERS and TREATMENT PLANTS; $1,400,000, STORM SEWERS. CD 8/5/59.

STREETS AND ROADS

▲ **Calif., San Jose**—City, City Hall, voted $8,870,000 bonds Feb. 7, STREET IMPRVTS., BRIDGES, OVERPASSES and SIGNAL SYS. CD 6/17/57.

EARTHWORK, WATERWAYS

▲ **New Jersey**—New Jersey Power & Light Co., Madison Ave. and Punch Bowl Rd., Morristown, N. J., Yards Green HYDRO ELECTRIC POWER PROJ., reservoir, Rte. 94, Pahaquarry Twp., Blairstown. $35,000,000. Ebasco Services, Inc., 2 Rector St., New York 6, N. Y., consult. engr.

AIRPORTS

▲† **Ala., Montgomery**—U. S. Eng. Office, 2301 Grant St., Mobile, plans by Warren, Knight & Davis, Protective Life Bldg., Birmingham, 225-bed HOSPITAL, Maxwell Air Force Base, $3,500,000.

▲ **Tex., Fort Worth**—City, City Hall, 2,600 ft. extension of North-South RUNWAY northward over Hy. 183 and 550 ft. extension southeastward of main runway at Amon Carter Airport. $3,300,000. Carter & Burgess, 1100 Macon, Fort Worth, and Howard, Needles, Tammen & Bergendoff, 1805 Grand St., Kansas City, Mo., consult. engrs. CD 7/28/60.

UNCLASSIFIED

▲ **Massachusetts**—Boston Edison Co., 178 Tremont St., Boston, 3 mi. underground PIPING, electric wire lines, from Brighton to Boston. $4,000,000. Bids May 1961.

PUBLIC BUILDINGS

▲ **Calif., San Jose**—City, City Hall, voted $3,680,000 bonds Feb. 7, MAIN LIBRARY, three BRANCH LIBRARIES.

▲ **N. J., East Orange**—East Orange Housing Auth., City Hall, plans by E. N. Turano, 16 E. 52nd St., New York 22, N. Y., HOUSING, Section I, 1-10 story, 64 unit apartment for elderly, N. Grove St., $1,034,000; Section II, four 3-10 story 236 unit apartments, Sussex and 9th Aves., South 16th and Steuben Sts., $3,990,000. Bids in Summer. CD 8/29/60.

▲ **N. Y., Suffern**—Ramapo Central School Dist. 1, Hemion Rd., $3,230,000 bond election Mar. 16, three ELEMENTARY SCHOOLS and SCHOOL ADDN.

▲ **N. C., Greensboro**—Guilford Co. Bd. Educ., Courthouse, Zone 3, plans by Robert W. Conner, 208 E. Green St., High Point, and Lawrence H. Mallard, 2820 Lawndale Dr., Greensboro, and Andrews & McGeady, 1856 Pembroke Rd., Greensboro, three CONSOLIDATED HIGH SCHOOLS. $3,900,000. Watson Engineers, 1101 E. Bessemer Ave., mech. engrs.

▲† **Wash., Auburn-General Services Admin.**, 19 and F Sts. N.W., Wash., D. C., plans by Harmon, Pray & Detrich, 2000-5th Ave. Bldg., Seattle, Wash., conversion of government owned bldgs. for use as General Services Admin. STORES DEPOT and RECORDS CENTER, $3,000,000. CD 11/28/60.

▲ **Newfoundland, St. John's**—Province of Newfoundland, Parliament Bldgs., plans by Fleming & Smith, 1247 Guy St., Montreal, Que., NURSES RESIDENCE and TRAINING SCHOOL, St. John's General Hospital site. $3,000,000. McDougall & Friedman, 1247 Guy St., Montreal, Que., consult. engrs. CD 2/8/61.

COMMERCIAL BUILDINGS

▲ **Calif., Palo Alto**—Palo Alto Inn, Inc., c/o Melvin Grossman, archt., 420 Lincoln Rd., Miami, Fla., 8 story HOTEL, SWIMMING POOL, El Camino Real and Adode Creek. $3,000,000.

▲ **Fla., Lauderdale-By-The-Sea (Fort Lauderdale P.O.)**—Radice Constr. Corp., 10 Franklin Ave., White Plains, N. Y., plans by George J. Sole, 347 E. 52nd St., New York, N. Y., 222 APARTMENT UNITS. $5,000,000. H. J. Ross & Assocs., 1735 Biscayne Blvd., Miami, consult. engrs.

▲ **Fla., St. Petersburg**—Bernard Greenbaum, 59 Van Buren St., Chicago, Ill., plans by Curt A. Esser, 59 Van Buren St., Chicago, Ill., 11 story, 100,000 sq. ft. OFFICE, 25,000 sq. ft. retail store, 3rd to 4th Ave. N. 31st to 33rd Sts. $3,100,000. Robert Greenbaum, 159 Van Buren St., Chicago, Ill., consult. engr.

▲ **Me., Waterville** — Sisters' Hospital, Highwood St., plans by James H. Ritchie & Assoc., 135 Clarendon St., Boston, Mass., HOSPITAL. $3,500,000. Bids April 1961.

▲ **Mass., Worcester**—Owner, c/o Theodore J. Brodeur, archt., 286 Lincoln St., COMMUNITY CENTER, Mill St. $5,000,000. Bids March 1961.

▲ **N. J., Irvington**—Garden Grove Corp., 17 Academy St., Newark, 125 two family HOUSES, Eastern Parkway and Grove St. $3,500,000.

▲ **N. J., Newark**—Bd. Trustees Seton Hall University, South Orange Ave., South Orange plans by Emil Schmidlin, 50 Evergreen Pl., East Orange, 8 CLASSROOM BLDGS., Downtown Center $3,000,000. Bids 1962. CD 10/8/59.

▲ **N. J., Paterson**—St. Joseph's Hospital, 703 Main St., SURGICAL-LABORATORY BLDG., out-patient and emergency bldg. $3,619,500. To go ahead Nov. 1961.

▲ **N. J., Princeton**—Princeton Manor House, 341 Nassau St., plans by Fulmer & Bowers, 341 Nassau St., 8 story COOPERATIVE APARTMENT. $5,000,000. Bids early in 1962.

▲ **N. J., Roselle**—Diocese of Newark, 33 Mulberry St., Newark, N. J., plans by Robert Moran, 642 Eagle Rock Ave., West Orange, HIGH SCHOOL for 1500 boys. $3,000,000. CD 1/3/61.

▲ **N. Y., Herrick**—(Br. Williston Park)—Alexander Muss & Sons, Inc., Time & Life Bldg., New York, Zone 19, 250 HOUSES, 75 acres, Union Turnpike Extension between Marcus Ave. and Old Court House Rd. $7,500,000.

▲ **N. Y., New York**—86 St. and Second Ave. Holding Corp., 44 Court St., Brooklyn, plans by Slingerland & Booss, 342 Madison Ave., Zone 17, 20 story APARTMENT, GARAGE, 300-34 E. 87 St. at Second Ave. $7,000,000.

▲ **N. Y., New York**—Pyramid Development Corp., 418 Bryant Ave., Brooklyn, Zone 13, plans by Philip Birnbaum, 12 E.48 St., Zone 17, 19 story, penthouse 20,600 sq. ft. 265 unit Quaker Ridge APARTMENT, 3 Ave. northeast corner 21 St. $6,000,000. Constr. 1961.

▲ **N. Y., New York**—1 Whitehall St. Corp., 415 Madison Ave., New York, Zone 17, plans by Richard Roth of Emery Roth & Sons, 400 Park Ave., New York, Zone 22, 21 story, 142 x 167 ft. OFFICE east side Whitehall St. between Bridge and Stone Sts. $4,000,000.

▲ **N. C., Charlotte**—Cotswold Shopping Center, Inc., 116 W. 3rd St., plans by Charles W. Connelly, 1201 Elizabeth Ave., 300,000 sq. ft. SHOPPING CENTER, Sharon Amity and Randolph Rds., $3,000,000.

▲ **O., Bedford Heights**—Alvin Homes, 18009 Holland Rd., Berea, 276 HOMES, Penns Wood Estates off Columbus Rd., $4,000,000. Constr. in Spring.

▲ **O., Lakewood**—G. N. Seltzer, 4080 Park Fulton Oval, Cleveland O., and Fred Parr, 1 Drumm St., San Francisco, Calif., plans by Outcalt, Guenther & Van Buren, 13124 Shaker Sq. Cleveland, two 15 story APARTMENTS, and two 21-story APARTMENTS, MARINA, INDOOR PARKING, RECREATION FACILITIES, Lake Ave. $20,000,000.

▲ **Pa., Phila.**—John A. Robbins Co., Inc., 3 Penn Center Plaza, two 10 story HOTELS, two underground levels for parking, 30th St. $10,000,000.

▲ **Tex., Dallas**—Southern Methodist University, plans by Geo. H. Dahl, 2101 N. St., Paul, FINE ARTS BLDG., 5 bldgs., incl. remodel McFarland Auditorium, Resital Hall, Arts Exhibit Hall, drama and speech arts bldg., art bldg. and music bldg. $4,500,000. CD 3/4/60.

▲ **Tex., Fort Worth**—Matt Markum, Sr., 5501 E. Belknap St., plans by Charles T. Freelove, Cont. Life Bldg., 1 story, 300,000 sq. ft., masonry fireproof, airconditioned SHOPPING CENTER and 100 room motel, parking, 5500 blk. E. Belknap St. $3,000,000. Bids 4/1/61.

▲ **Tex., Houston**—Baptist Presbyterian Homes, Inc., (affiliate of the Presbyterian Church), c/o Wilson, Morris, Crain & Anderson, archts., 3330 Graustark St., 6 story, masonry, APARTMENT for the aged, Bayou Manor, South Braes Blvd. and Stella Link Rd. $2,700,000.

▲ **Que., Montreal**—Bd. Governors, McGill University, Sherbrooke St. W., plans by Barott, Marshall, Merrett & Barott, 1425 Mountain St., 14 story, 20 side MEDICAL SCIENCE CENTER, Pine Ave. $4,000,000-$5,000,000. Lindley Shector, 1425 Mountain St. consult. engrs. CD 4/7/60.

INDUSTRIAL BUILDINGS

▲ **Calif., Fremont**—General Motors Corp., Argonaut Realty Co. Div., General Motors Bldg., Detroit, Mich., AUTOMOBILE MANUFACTURING PLANT, 394 acre site, between Nimitz Freeway, Warm Springs Blvd., Fremont Blvd. and Warren Ave. $100,000,000. Land grading will begin soon. CD 12/20/60.

▲ **Calif., Selma**—Sun Maid Raisin Growers of California, 2902 E. Hamilton Ave., Fresno, plans by Walter Wagner & Partners, 1830 Van Ness, Fresno, Calif., RAISIN PROCESSING PLANT, Hy. 99. $3,000,000.

▲ **Cal· Tracy**—Owens-Illinois Glass Co., Owens-Illinois Bldg., Toledo, O., GLASS CONTAINER PLANT, near here. $3,000,000.

▲ **N. Y., Port Jefferson**—Keen-Kramer Assocs., c/o Emil Keen, 3020 Wilson Ave., Wantagh, plans by Scheiner & Swit, 1902 Merrick Rd., Massapequa, 1,500,000 sq. ft. Port Jefferson INDUSTRIAL PARK, 118 acres, incl. 25 acres service and recreational center, office, restaurant, motel, bowling alleys, heliport, swimming pool, along Nesconset-Port Jefferson Hy. west of Route 112. $15,000,000.

▲ **Tex., Houston**—National Distillers & Chemical Corp., 99 Park Ave., New York, N. Y., polyethylene plastic PLANT. $15,000,000-$20,000,000.

▲ **Newfoundland, Baie Verte**—Advocate Mines, Ltd., 300 Bay St., Toronto, Ont., Canadian Johns Manville Co., Ltd., 310 Victoria St., Montreal, Que., Patino of Canada Ltd., 55 Yonge St., Toronto, Ont., Amet Corp. and Financiere Belge de L'Asbestos-Ciment, S.A., ASBESTOS ORE DEVELOPMENT, asbestos fibre mill, crusher bldg., dry rock storage, warehouse and service bldg., $18,000,000. Surveyer, Nenniger & Chenevert, 1440 St. Catherine St. W., Montreal, Que., consult. engrs. CD 10/18/60.

FOREIGN

▲ **Ghana, Tema** — AGIP Mineraria, Castella Postale 4174, Milan, Italy, PETROLEUM REFINERY. $22,000,000.

▲ **Israel, Jerusalem** — Knesseth (Parliament) Building Committee, Jerusalem, plans by Joseph Klarwein, Jerusalem, and Dov Carmi, consult. archt., Tel-Aviv, 6 story, 3 floors underground, 200x200 ft. Knesseth (PARLIAMENT) BLDG. $3,500,000.

▲ **Netherlands West Indies, Aruba**—Executive Council, Island of Aruba, c/o Edouardo Tarloni, mgr. dir. Aruba Chemical Industries, N. V. Curacao, SULPHURIC ACID PLANT, phosphoric acid plant, urea plant and fertilizer plant. $41,000,000.

▲ **Union of South Africa, Phalaborwa**—Phosphate Development Corp. Ltd. (FOSKOR), Johannesburg, PHOSPHATE MINE EXPANSION, Transvaal. $8,400,000.

▲ **Union of South Africa, Pretoria** — Dpt. Transport, Transport Bldg., Fountain Lane, Pretoria, TERMINAL BLDG., Jan Smuts Airport. $4,480,000.

(Proposal Advertisements see pp. 60 to 62)

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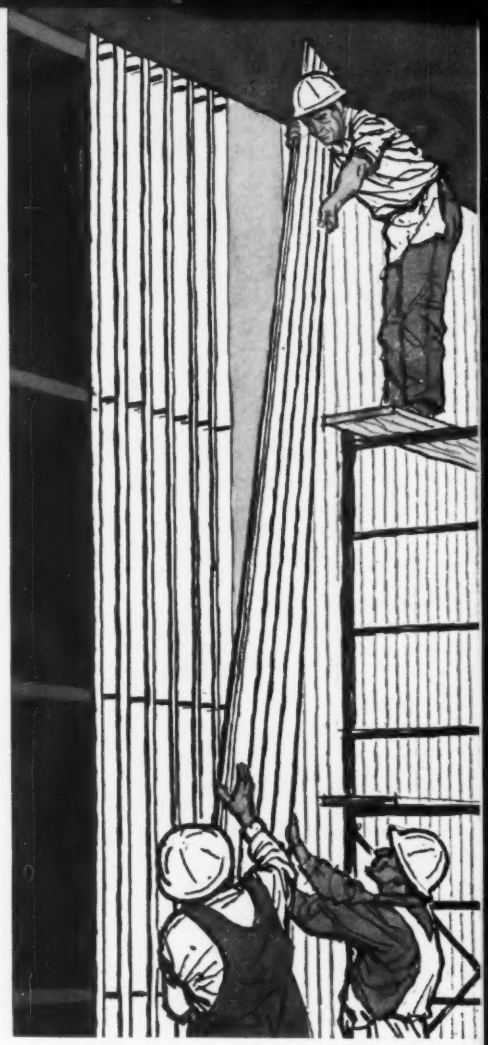

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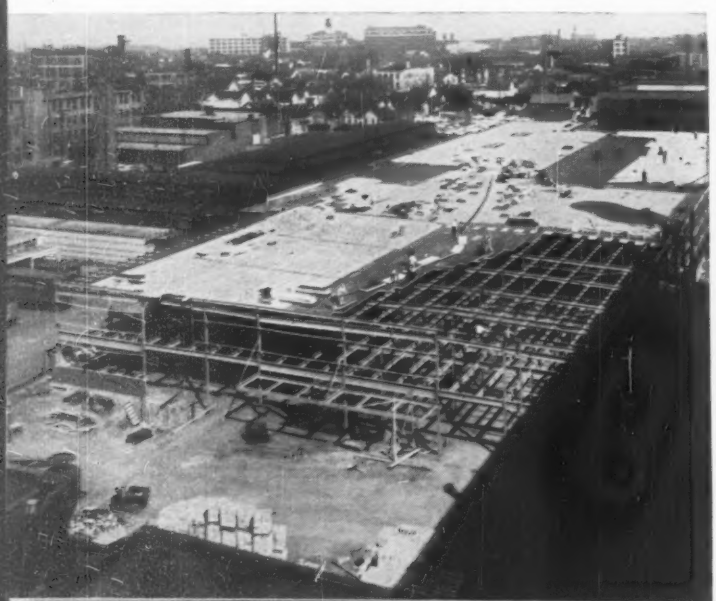

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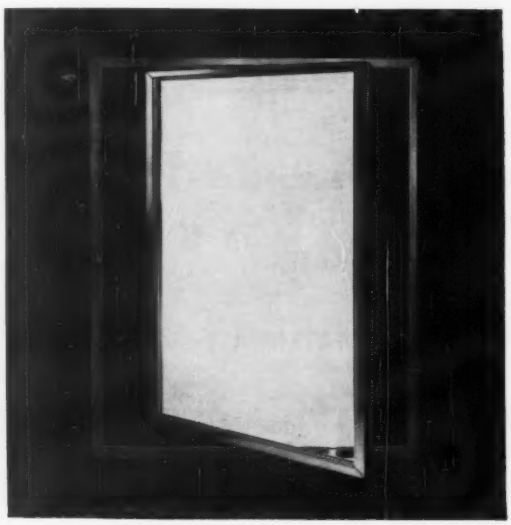

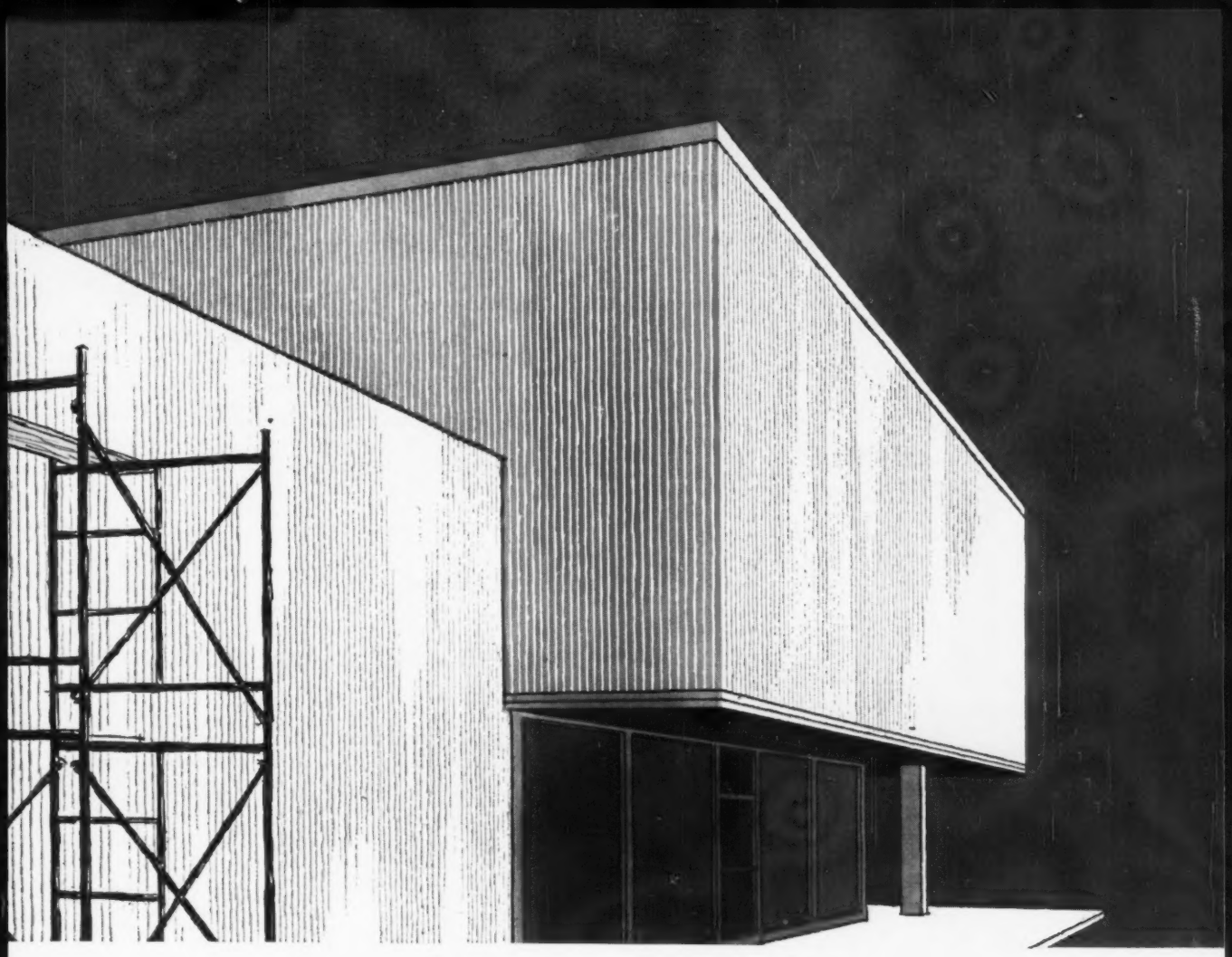

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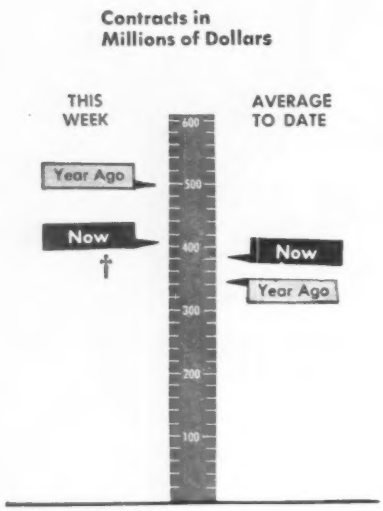
Construction Scoreboard

This Week...



AMOUNT OF CONTRACTS LET

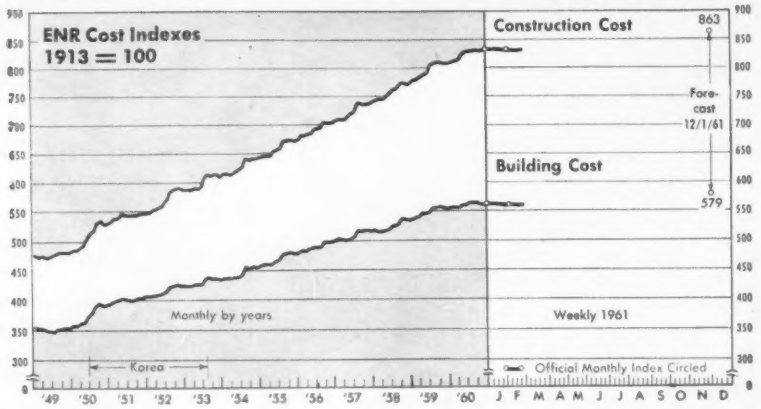
Contracts Awarded In 50 States By Type	This Week†	1961	Cum. 9 wks Chge '60-'61 %
	millions		
All Heavy Construction	$405.6	$3,425.8	+8
By Ownership			
PRIVATE	244.6	1,776.0	+3
PUBLIC	161.0	1,649.8	+13
State & Municipal	117.4	1,282.5	+14
Federal	43.6	367.3	+11
By Type of Work			
PUBLIC			
Waterworks	6.2	58.0	+16
Sewerage	4.2	99.4	+2
Bridges*	2.8	85.7	−49
Highways	48.0	588.1	+42
Earthwork, Dams & Waterways	23.8	102.6	−7
Buildings:			
Excl. Housing	39.0	423.0	+40
Housing	13.5	105.6	+25
Unclassified	23.6	187.5	−19
PRIVATE			
Buildings:			
Mass Housing	75.5	674.7	−12
Commercial	58.1	375.8	+27
Industrial	104.4	642.3	+37
Unclassified	6.5	83.1	−55

* Includes Private bridges † 4-day week

NOTE Minimum size projects included are: Waterworks and waterways, $53,000; other public works, $88,000; industrial buildings, $110,000; other buildings, $400,000.

NEW CONSTRUCTION CAPITAL

	Week of Feb. 23	Cum. 8 wks	Chge '60-'61 %
	millions		
Corporate Securities	$37.9	$267.8	−14
State and Municipal:			
All Except Housing	106.0	903.0	−19
Housing	1.3	2.9	+12
Federal Loans	10.8	41.7	+286
Federal Aid	0	0	0
Total Nonfederal	$156.0	$1,215.4	−16
Federal Appropriations:			
Projects in U.S.	0	0	0
Outside U.S.	0	0	0
Total New Capital	$156.0	$1,215.4	−16



ENR INDEXES (1913=100), 20-cities' average	Week of Feb. 23 1961	% Change from Jan. 26 1961	% Change from Feb. 25 1960
Construction Cost	834.08	−0.03	+2.6
Building Cost	562.74	−0.04	+1.6

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.

Latest Month . . .

BACKLOG OF PROPOSED HEAVY CONSTRUCTION

	January 1961 (millions)	Percent Change from last Month	Year
Total U. S. (ENR reported)	$125,347	+0.5	+5.6
By Ownership—			
Private	56,125	+0.6	+7.9
State & Municipal	54,798	+0.9	+4.7
Federal	14,424	−1.2	+0.2
By Type of Work—			
Waterworks	3,008	+3.1	+5.1
Sewerage	4,123	+0.1	+7.1
Bridges	3,343	+1.8	−2.8
Highways	13,574	−0.4	+4.8
Earthwork, Dams and Waterways	12,094	−0.3	+0.1
Public Buildings	22,950	+1.0	+5.6
Industrial Buildings	18,013	+0.1	+4.6
Commercial Buildings	27,520	+0.9	+14.0
Unclassified, Private	10,592*	+0.4	+0.2
Unclassified, Public	10,130	+0.6	+3.0

* Includes Private Bridges, $101 million

FLOW OF NEW PROJECTS INTO THE BACKLOG

	1961 Jan. (millions)	Percent Change from 1960 Dec.	Jan.
Total U. S. (ENR reported)	$2,001	+6	+24
By Ownership—			
Private	938	+15	+17
State & Municipal	1,041	+4	+43
Federal	22	−64	−75
By Type of Work—			
Waterworks	170	+334	+392
Sewerage	37	−41	−43
Bridges	72	+146	+70
Highways	137	−60	+128
Earthwork, Dams and Waterways	3	−80	−91
Public Buildings	517	+5	−4
Industrial Buildings	299	+33	+18
Commercial: Mass Housing	227	+2	+2
Other Building	334	+7	+26
Unclassified, Private	78	+41	+35
Unclassified, Public	127	+35	+207

FLOW OF PROJECTS OUT OF THE BACKLOG INTO CONTRACTS

Total U. S. (ENR reported)	$955	−10	+43
By Ownership—			
Private	395	+16	+47
State & Municipal	400	−17	+52
Federal	160	−32	+18

Construction Budgets Get Bigger

- **States' plans for buildings and highways require tax boosts if hopes are to be fulfilled.**
- **Other proposals would require contractor licensing, competitive aids for resident firms.**

The battle of the bulging budgets is warming up in 44 states. Reports to ENR from 21 of them indicate that some states' construction plans may be bigger than their treasuries.

Most of the governors submitted requests topping those of previous years, the totals running from the $2-billion-plus budgets of New York and California to Maine's $119-million general fund operation.

For the most part, chief administrators and their advisors are recommending tax boosts of various types to pay not only for construction, but other services. Fourteen states are considering a boost in the gasoline tax. A fifteenth – Pennsylvania – has already raised this levy from five cents to seven cents a gallon to bring in an additional $74 million yearly starting April 1 (ENR Feb. 16, p. 28). In most cases, if the reporting states hope to fulfill their plans for $3.5 billion worth of highways and $517 million worth of buildings and institutions, they will have to find more tax revenue.

New York's construction program will be huge. Of the $2.4-billion budget, all types of state public works would get $345 million, a $71-million increase over the construction allotment for the current fiscal year. Highways will get $189 million in addition to $248 million already appropriated but as yet unspent.

Gov. Edmund Brown of California stepped ahead of New York's Gov. Nelson A. Rockefeller with a $2.6-billion budget, of which $422 million would go for construction, including highways.

Governor Brown also asked for, and the legislature granted, authority to sell immediately $30 million worth of school construction bonds as a recession antidote. This will supplement the state's $12-million-a-month school program, which comes out of the $300-million total approved by the voters last year.

Maine, Pennsylvania, West Virginia and Wisconsin also have passed or are considering some form of public works anti-recession measure. Signed into law by Gov. William W. Barron of West Virginia are two tax measures that will bring in an extra $25 million for emergency public works. One measure boosts the sales tax to 3% from 2% through August of this year; the other levies an income tax equal to 6% of the amount of an individual's federal income tax.

Maryland's $16.8-million capital improvements program will require an increase in the state's real estate tax. Now at 16 cents per $100 of valuation, the levy would rise to 17 cents per $100.

To obtain more money for schools, and also remove financing of farm-to-market roads from the general fund, Texas' Gov. Price Daniel wants the gasoline tax boosted from five cents a gallon to six. If passed, the tax would lighten the general fund's roadbuilding burden by $15 million and swell school construction funds by $16 million.

Ohio's highway construction program would be dealt a severe blow if the legislature passes a bill that would prohibit borrowing from state trust funds by the Highway Department. Under current practice, funds for right-of-way purchases are obtained in this way. The commissioner contends the practice permits the state to buy land at the cheapest price well in advance of construction. Moreover, construction money, needed now, would have to be diverted to buy land.

Maine's Gov. John H. Reed urges approval of his $9.3-million building program, contending it will be anti-recessionary. Gov. Gaylord Nelson of Wisconsin puts the same label on his $6.8-million state building program.

Establishing new or a beefing up of existing industrial development programs are also considered now as recession fighters. Gov. David L. Lawrence of Pennsylvania wants $8 million for its industrial development program. This is about double the current program.

Maine wants to gives its Industrial Building Authority the right to insure industrial-building mortgages up to a maximum of $5 million instead of $1 million. West Virginia lawmakers have a proposal to initiate an industrial development program with a $3-million appropriation. Under the plan, the cost of a new industrial building would be shared by the state, the community and the company–30%, 20% and 50% respectively.

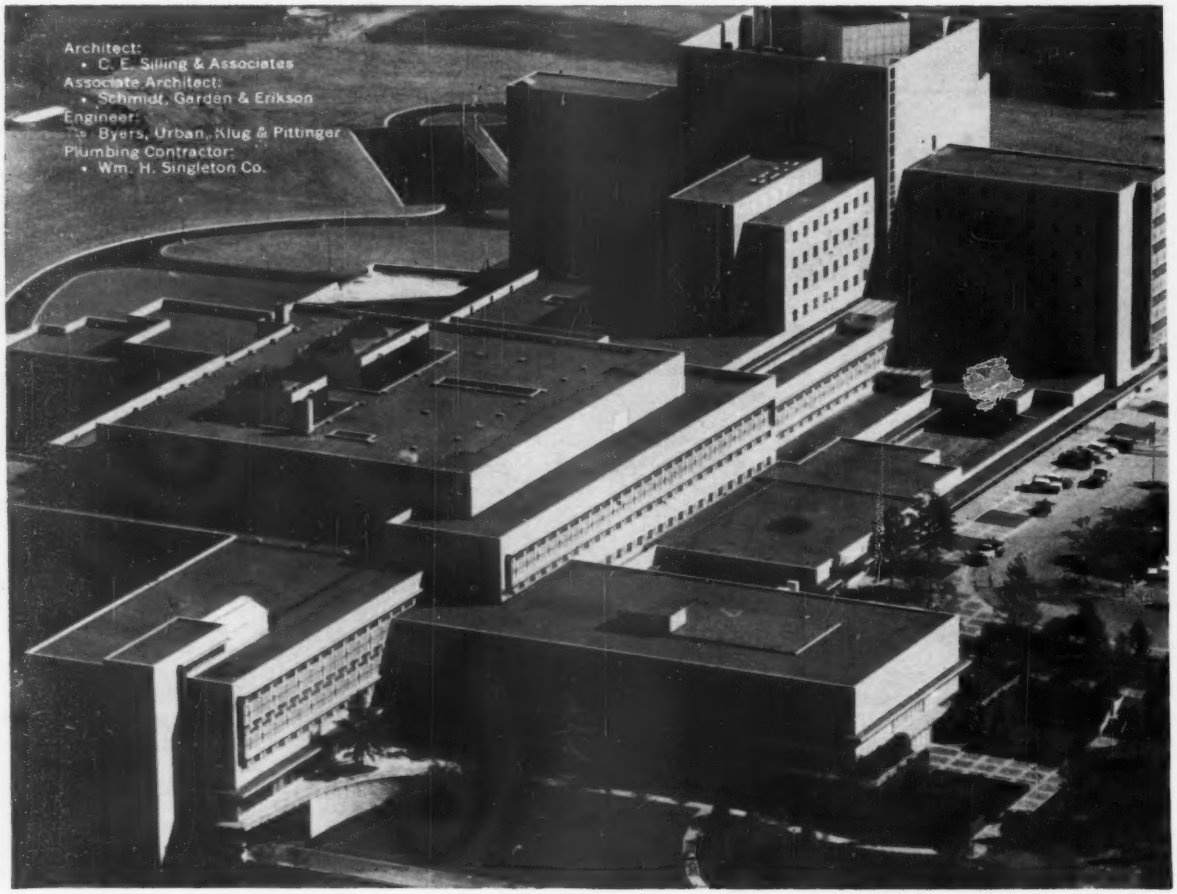
Ohio proposes to run in the opposite direction: It would abolish the two-year-old Department of Economics and Industrial Development.

Licensing of contractors is being considered in three states and was rejected in a fourth. Colorado proposes establishment of a contractor-licensing system. Maryland makes a similar proposal, and its bill has sharp teeth. Should a contractor be found by a court to have performed shoddy work or perpetrated a fraud, his license would be revoked. In Utah, where contractors are now licensed, a specialty contractor would also have to obtain a $2 license. In Wyoming, a bill that would have established a state licensing board died when the legislature adjourned without completing action on the proposal.

The legislatures of two states–Montana and Washington–are considering measures that would give in-state contractors a competitive advantage over out-of-state companies. In Montana, resident contractors would get a 5% bid-price advantage over non-residents. The same competitive advantage would be provided resident contractors in Washington, but because the bill is receiving little support from contractor groups, passage is considered unlikely. Oregon passed a bill giving resident contractors a 10% advantage over non-residents competing for construction of a $4.7-million floating drydock for the Port of Portland. Customary differential is 5% for resident contractors who obtain at least 50% of their materials from in-state suppliers. Bids for the Portland project will be received at the port's office, 5848 N. Lagoon Ave., until 10 am April 3.

In Wisconsin, a proposal to establish a toll turnpike system was killed by the legislature; in Arizona, the lawmakers are considering a similar proposal.

But of all the proposals, the bleakest one–as far as contractors are concerned –comes from Montana's Gov. Donald E. Nutter. He is asking for a two-year moratorium on all state building except highways. Chances are poor that this request will be granted.



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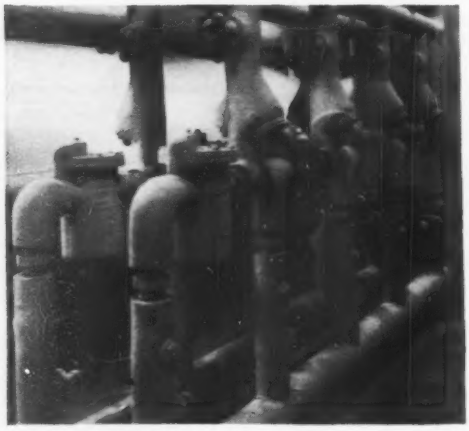

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Labor

AFL-CIO Wants More From JFK

- **Federation claims the President's legislative proposals are not enough to halt recession.**
- **It urges broader temporary measures, a more decisive approach to faster economic growth.**

While Congress was taking its first positive action on President Kennedy's anti-recession bills last week, the AFL-CIO's high command was challenging the Administration's economic recovery program as too small.

Federation leaders took pains to deny a split with the White House, but minced no words in their criticism of the Kennedy tax, minimum wage and unemployment compensation proposals.

They sharply disagreed with proposed plans to grant larger tax allowances for the modernization of production facilities and equipment. "We strongly oppose any tinkering with depreciation rates or other tax incentives to business investment," the union leaders said.

They objected to the Administration's plans for raising the minimum wage slowly and for temporary extension of unemployment benefits. Besides advancing its own suggestions for an anti-recession legislative program, the federation proposed a major overhaul in the federal income tax structure that would add, it claimed, $18 billion to federal collections.

The AFL-CIO's economic program evolved at the mid-winter meeting of the AFL-CIO Executive Council in Miami Beach, where the recession and the 5.3 million unemployed headed the list of agenda items. The labor leaders predicted unemployment will soon reach 7%, or nearly 6 million.

While the AFL-CIO officials openly displayed their frustrations at the measures offered by the President, they were less critical in their private comments. Actually, they are hoping that the White House plans succeed and that labor's announced opposition may enhance that possibility.

By providing such open opposition, the union chiefs believe they can further the White House bargaining position before Congress. The reasoning is that the President can now claim to be taking a middle-of-the-road position and that his program is the necessary compromise.

The unemployment benefits bill—H. R. 4906—has already emerged from the House Ways and Means Committee and is slated for House action this week. The bill calls for a 0.4% increase in the unemployment compensation tax paid by employers, effective next January, and would provide about $1 billion in additional benefits to claimants who have exhausted their state benefits since last June.

In its criticism of the proposal, the AFL-CIO said the benefit date should be retroactive to last May and that all jobless workers should be covered.

The philosophy behind the criticism is common to the rest of the federation's economic proposals: The recession stems from a lack of purchasing power, which is too small to support even the productive capacity we now have.

It is largely for this reason that the federation wants the minimum wage raised immediately to $1.25 and the coverage broadly extended. The philosophy accounts, too, for the AFL-CIO's rejection of increased tax allowances for business investments and for its recommended repeal of the dividends tax credit and other provisions that favor the more affluent but less numerous members of our society. Among the AFL-CIO's tax proposals is one for a $100 tax rebate for all tax payers this year.

Even if all the Kennedy proposals are adopted, the Executive Council warned, "unemployment will still be higher at the end of the year than it was during the bleak final quarter of 1960." It urged that economic measures of a temporary nature be supplemented by a "decisive two-year" program designed to increase national production by 15% by the end of 1962.

Urges Halt to 'Spiraling' Wages

Building trades unions in New Jersey were urged last month to abandon the idea "that an annual wage increase is an accepted practice" and to join in a common effort to halt the wage-cost spiral and to eliminate "archaic work rules and costly strikes."

In a telegram to Sal Maso, president of the State Building and Construction Trades Council, AFL-CIO, the New Jersey Building Contractors Association warned that high wages—and the fear of higher ones—may increase the ranks of the unemployed by deterring industrial and commercial firms from planning new construction in the state.

Mr. Maso has sent a copy of the telegram as a special bulletin to all local building and construction trades councils in the state and to all state organizations and local unions. Noting that the issues raised are matters of local autonomy, he has asked the local groups for their comments.

Meanwhile, the Building Contractors Association has asked the newly established President's Labor-Management Advisory Committee to review what it calls "preposterous and outrageous" demands of some of the construction unions in the state. This year's demands, it said, are running from 32 cents to $1.00 an hour and, unless restrained, could turn 1961 bargaining into a "fiasco."

Members of the contractors association are facing labor contract negotiations with the building trades in 13 counties. Annual wage increases, according to the association, have ranged from 12½ to 25 cents an hour since the war. At present scales, with fringe benefits added, bricklayers in one county are getting $5.45 an hour, carpenters in another county $4.81, and iron workers in northern New Jersey $5.23.

Association director Paul J. Brienza said many union officials will agree privately that wages are now at the maximum for present economic conditions. He reported that there is some fear among employers that, if the Kennedy Administration pushes public works as an anti-recession measure, the unions will come to the bargaining table "determined to get an extra share of this money" in wage increases.

The NJBCA suggested in its telegram to Mr. Maso that the wage and work rule cost problem be studied by a "task force" committee representing construction labor and management, the government and the public.

Buy Real Estate, Unions Told

The construction industry is not making much of a contribution to a program from which it may eventually receive considerable benefit. The program: a bigger investment of union funds in government-insured mortgages and construction loans.

Latest available figures indicate that there are some 261 pension funds in the construction industry to which employers are contributing more than $85.5 million a year. Total reserves in these funds now add up to about $275 million. Of this amount, only $66 million is invested in real estate—and most of this investment comes from only three of the 261 construction industry funds.

A nationally known pension consultant, Martin E. Segal, discussed the problem and its implications and possibilities with the AFL-CIO building trades unions when they met in Miami last month.

Building trades president C. J. Haggerty explained that the unions in his department are embarking on a program of self-education and are gathering facts and figures that will help trustees and union officials implement the AFL-CIO's investment policy. The federation is trying to encourage greater investment of union funds in homebuilding and other construction work. It has set up a Department of Investments with Alexander Bookstaver as director.

Mr. Segal said greater emphasis on real estate investments could give pension reserves a substantially higher yield.

A return of about 4.5% might be possible, he noted, instead of the present return of 3.7 to 3.9%. Mr. Segal suggested that 15 to 25% of the reserves in pension funds could reasonably be put in FHA, VA and other government-insured construction loans. Such action, he observed, would provide money for needed housing and other construction projects, and would generate work for the construction industry, while meeting the traditional tests of safety and yield.

Mr. Haggerty said the building trades are studying the problem of union fund investment without limiting their thinking to pension funds. The problem, he explained, is common to any fringe benefit fund that operates with strong reserves and may apply to the general funds in some union treasuries.

As an indication of the investment potential involved, Mr. Segal cited these figures: Reserves in private pension funds, on a multi-industry basis, now exceed $45 billion. Insurance companies have about half of the reserves, and the balance—over $27 billion—is self-insured. Private pension reserves are expected to reach $77 billion in 1956 and over $100 billion in the 1970s. Only 2.2% of present reserves in self-insured funds are in real estate.

In a collateral development last week, the AFL-CIO Executive Council, meeting in Miami, told Mr. Bookstaver to move ahead with the federation's program of investment counseling. AFL-CIO President George Meany said the program can be expected to create new jobs and bolster the economy.

Single Labor Pact Is Urged

Out of the tough and sticky labor contract negotiations that occurred in New York City's billion-dollar construction industry last summer has come a plea for a single labor agreement covering all the local building trades unions.

I. Roy Psaty, who is entering his second term as president of the Building Trades Employers' Association, said last week that he is recommending formation of a joint committee with the AFL-CIO Building and Construction Trades Council to reexamine the present bargaining pattern under which the different contractor groups negotiate separately with the trades whose members they employ.

When trade agreements expire separately, Mr. Psaty explained, the industry runs the risk of "paralysis which sets in when some of the trades stop work while others continue, or would like to continue but cannot, resulting in tremendous losses to labor, management and the public."

More than 20 different labor contracts were negotiated by New York City contractor groups last year. Several strikes and work stoppages occurred at different intervals, giving construction industry operations an on-again-off-again tempo during most of the summer months.

"To have had this experience without earnestly seeking a means of avoiding recurrences in the future, Mr. Psaty said, would be a sad commentary on the leadership of the industry. This is a problem that both management and labor must tackle together."

NLRB Rules Out Demand For Agency Shop Clause

Organized labor received a setback in its fight against right-to-work laws last week when the National Labor Relations Board held that an employer cannot be forced to bargain on a union's demand for an agency shop clause under the Indiana right-to-work law.

In a 3-to-2 decision, the board ruled that General Motors Corp. did not violate the Taft-Hartley Act by refusing to bargain on a United Auto Workers' demand for an agency shop clause in some of its labor contracts. The board dismissed an unfair labor practice complaint against GM.

Under an agency shop clause, workers who are in a bargaining unit but who decline to join the union are required to pay the union the equivalent of union dues and other fees. The clause is a device for getting around right-to-work laws, which forbid compulsory unionism, in states that have not specifically banned the agency shop. The theory is that workers who benefit from union representation should pay their share of the cost of representation.

Although an Indiana state court has ruled that the Indiana law does not outlaw the agency shop, NLRB chairman Boyd Leedom said "the conclusion is inescapable" that an agency shop arrangement, whatever its status under Indiana law, cannot be set up under federal law in a state like Indiana. He reasoned that federal law bans all union security devices except the standard union shop. And where that is banned by state law, there is no exception left for "any lesser form of union security."

Two other board members said the required payment of fees without the right to participate in union affairs would add up to a kind of discrimination the law forbids.

This is the first time the board has ruled on the issue. It is not a final answer to the agency shop problem but it does serve notice as to the risks involved in negotiating such clauses. The decision does not apply to similar situations in other states. A blanket ruling is impossible because the 19 right-to-work laws now in existence vary in scope and content from state to state.

The ambiguous Indiana law for example, bans agreements that "exclude from employment any person by reason of membership or non-membership in a labor organization." But it seems to go even further by stating as a matter of policy that workers have the right to refrain from "assisting" unions. A clearer and more sweeping law in Alabama outlaws the union shop and forbids compulsory dues payments.

OFFICIAL PROPOSALS

RATE: The rate for Official Proposal advertising is $2.70 per line or fraction set solid. Where the advertisement is set other than solid, the space is measured by total space occupied and charged on basis of 12 lines to the inch.

CLOSING DATE: Friday 10:30 A.M. for issue dated the following Thursday.

SEND COPY TO: Official Proposal Division, Engineering News-Record Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

Bids: March 16, 1961

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N.Y.—Pursuant to the provisions of the Highway Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time on the 16th day of March 1961, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles
DISTRICT No. 10, A. M. Sarr, District Engineer, 325 W. Main Street, Babylon, L. I., New York			
New York (Int. Trg. Rte. 78)	FILME 61-1	Interstate Route Conn. 513 Lower Manhattan Expressway (Expressway Structure under Chrystie Street) (Contract No. 1) Project EI-78-1 (43)	0.03

Type	Deposit	Estimated Cost of Work
Abutments, Piers and miscellaneous work to support subway structure across depressed roadway	$63,000 Plans $5	$1,137,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage), Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

If the deposit is $10.00 or more, full refund for one copy of the plans and specifications will be made to a bidder for the particular project, if such plans and specifications are returned in good condition within 30 days after the award of the contract or after the rejection of the proposal. The successful bidder is not required to return the copy of the plans and specifications in order to be entitled to such refund. If the deposit is $10.00 or more, partial refund will be made for the return of all other copies of plans and specifications in good condition within 30 days after the award of the contract or the rejection of the proposal.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as Amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bond shall conform to the provisions of the Highway Laws, as set forth in "Information for Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
Supt. of Public Works

Bids: March 16, 1961

Syracuse University

NOTICE TO CONTRACTORS
Project No. NY 30 CH-111 (s)
Syracuse University
(Owner)

Separate sealed bids for "General Construction", "Plumbing", "Heating and Ventilating", "Electric Work", "Kitchen Equipment". For Student Center will be received by Syracuse University at the Classroom Building, Utica College, Burrstone Road, Utica, New York until two o'clock P.M., E.S.T., March 16, 1961, and then at said office publicly opened and read aloud.

The Information for Bidders, Form of Bid, Form of Contract, Plans, Specifications, and Forms of Bid Bond and Performance Bond may be examined at said office and copies thereof obtained at the office of the Architects, 258 Genesee Street, Utica, New York upon payment of $50.00 for each set. Any bidder, upon returning such set promptly and in good condition, will be refunded his payment, and any non-bidder upon so returning such a set will be refunded $25.00.

Syracuse University reserves the right to waive any informalities in or to reject any or all bids.

Each bidder must deposit with his bid, a Bid Bond in the form and subject to the conditions provided in the Information for Bidders.

Attention of bidders is particularly called to the requirements as to conditions of employment to be observed and wage rates to be paid under the contract.

No bidder may withdraw his bid within 45 days after the actual date of the opening thereof.

CLARK LAURIE
BUSINESS MANAGER
UTICA COLLEGE OF SYRACUSE UNIVERSITY
UTICA, NEW YORK
DATE: February 20, 1961

Bids: March 16, 1961

Round Valley Reservoir Project South Dam and Tunnel and North Dam, Dike and Relocated Road and the Appurtenant Works Contracts RV-1 and RV-2

SEALED BIDS will be received from bidders by the Department of Conservation and Economic Development, at its offices, first floor, 205 West State Street, Trenton, N. J. at 11:00 A.M. Eastern Standard Time on March 16, 1961 and will be opened and read immediately thereafter for the following two contracts for the construction of the south dam and tunnel and the north dam and dike, all as set forth in the specifications. The work is located near the Borough of Lebanon, in the Township of Clinton, Hunterdon County, New Jersey.

Contract RV-1 is for the construction of the south dam of earth compacted by rolling with provisions for a future increase in the height of the dam which initially will be 1400 feet in length along the top and have a maximum height of about 175 feet. The foundation under the impervious core will be grouted to provide a tight seal. A short intake tunnel with a shut-off tower will be located in the west abutment of the dam.

Contract RV-2 is for the construction of the north dam and dike of earth compacted by rolling with provisions for a future increase in the height of these structures which initially will be 1460 and 2335 feet in length along the top, with maximum heights of 125 and 76 feet, respectively. The rock foundation under the impervious core will be grouted to provide a tight seal. Included in the contract are a portion of the relocated road and outlet conduits and works.

A bidder on both these contracts may, if he desires, specify in the bid form of either or both contracts that he will agree to make a percentage reduction from the total cost of the contract, if both contracts are awarded to him. Bids will be accepted from bidders prequalified with the Department of Conservation and Economic Development in accordance with R.S. 52:35.

A separate bid for each of the two contracts, each accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey in an amount not less than 2 percent of the bid, an Agreement of Surety, an Affidavit of Non-Collusion, the name and address of the prequalified subcontractor to do the grouting, drilling, core boring and sampling, an Appointment of Agent by Non-resident Bidders and revised Financial Statment and Plan and Equipment Statement on prequalification forms, must be enclosed and sealed in separate envelopes provided for that purpose by the Department. Bids not so submitted may be rejected. Bids must be delivered at the above place on or before the hour named, as no bids will be accepted after the hour specified.

Contract pamphlets for each of the two contracts containing information for bidders, forms of bid and contract, specifications, requirements as to surety and subcontractor for grouting etc., and separate folders of contract drawings can be obtained in the office of the Chief Construction Engineer of the Bureau of Design and Construction of the Division of Water Policy and Supply of the Department of Conservation and Economic Development, 32 East Hanover Street, Trenton, N. J., upon application in person or by mail, by depositing the sums of $15.00 for each contract pamphlet and $10.00 for each folder of contract drawings, and to cover the cost of mailing of one contract pamphlet and one folder of drawings, the additional sum of $5.00 per each set. All checks shall be drawn to the order of the Treasurer of the State of New Jersey. The deposit for the contract pamphlet will be refunded within 30 days of the award of contract upon the return of such document in good condition without written entries. Deposit will not be refunded for the folder of contract drawings. For further particulars apply to the office of the Chief Construction Engineer.

The Commissioner reserves the right to select the bids, the acceptance of which will be most advantageous to the State, price and other factors considered. Any and all bids may be rejected when the Commissioner determines that it is in the public interest so to do.

Salvatore A. Bontempo
Commissioner of Conservation and Economic Development

U. S. Government

Department of Commerce, Bureau of Public Roads, February 15, 1961. SEALED BIDS will be received at the office of C. E. Kinney, Division Engineer, Bureau of Public Roads, 920 South Jefferson Street, Roanoke, Virginia, until 11:00 a.m., E.S.T., MARCH 23, 1961, for Project 2S2, Blue Ridge Parkway, Buncombe and Henderson Counties, North Carolina. Grading, Draining, Four Tunnels with Lining, Crushed Aggregate Base and other work from Chestnut Cove Gap 2.964 miles to Beaverdam Gap. The approximate quantities of the more important items are: 350,000 cu. yd. Unclassified Excavation for Roadwork, 66,000 cu. yd. Unclassified Excavation for Tunnel, 19,000 tons Crushed Aggregate Base and 2,850 lin. ft. Concrete Tunnel Lining. Minimum wage rates have been fixed as required by law. Plans, specifications and bid forms are available upon request at the address given above or Bureau of Public Roads, 1440 Columbia Pike, Arlington 4, Virginia. F. W. Cron, Regional Engineer.

OFFICIAL PROPOSALS

Bids: March 9, 1961

Walt Whitman Bridge
Contract No. P-15

DELAWARE RIVER PORT AUTHORITY
of the
COMMONWEALTH OF PENNSYLVANIA
and the
STATE OF NEW JERSEY
Administration Building
Camden, New Jersey

Sealed bids will be received for constructing concrete medial barriers, erecting signs and sign bridges, and associated work for the Walt Whitman Bridge Approaches, Philadelphia, known as Contract No. P-15, at the office of the Director of Engineering of the Delaware River Port Authority, Administration Building, Benjamin Franklin Bridge Plaza, Camden, New Jersey, until 2:00 P. M., Eastern Standard Time, Thursday, March 9, 1961, at which place and time they will be publicly opened and read by the Authority.

A more complete description of the work and full information for the bidders is given in the Contract Documents and Specifications for this contract, which may be obtained upon deposit of $10.00, which will be remitted upon receipt of bid or the return in good condition of the copies so taken, within thirty days after the opening of bids.

Each proposal must be accompanied by a certified check in the sum of $15,000, payable to the Delaware River Port Authority and drawn upon a National or State Bank or Trust Company having an office or place of business either in Philadelphia, Pennsylvania, or Camden, New Jersey, together with a financial statement and a list of comparable work successfully completed, all of which must not be enclosed with the sealed bid but handled in separately. The surety's consent must be shown. The bidder to whom the contract is awarded will be required to furnish a Performance and Labor and Materialman's Bond in the sum of 100 percent.

The Authority will afford prospective bidders an opportunity to inspect the site of the work.

The Authority reserves the right to waive any informalities in the bids received, to reject any or all bids and to award the contract only to those experienced in this class of work and to the bidder whose proposal is deemed by the Authority to be most advantageous to the public interest.

DELAWARE RIVER PORT AUTHORITY
C. H. McWILLIAMS
2/8/61 SECRETARY
MEC

Bids: see advertisement

The Port of New York Authority

Sealed proposals for the following work will be received at the Office of the Chief Engineer, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on date indicated, at which time said proposals will be opened and read in Room 1108.

Contract NYA-120.010—New York International Airport—Addition to Building No. 90—Deposit $30.00 per set of documents—Bids will be received until 2:30 P.M. on Thursday, March 23, 1961.

Contract NYA-120.012—New York International Airport—Eight Fuel Tanks—Deposit $30.00 per set of documents—Bids will be received until 2:30 P.M. on Thursday, March 23, 1961.

Contract BP-507.302—Brooklyn-Port Authority Piers—Borings at Existing Piers 29, 30 & 32—No deposit required—Bids will be received until 2:30 P.M. on Thursday, March 16, 1961.

Contract documents may be seen at the Office of the Assistant Chief Engineer for Design, Room 1115, 111 Eighth Avenue, New York 11, N. Y. Documents will be furnished upon receipt of the above deposit (each set including one copy of the Contract Drawings) for not more than three sets to any one company. Additional sets will be furnished upon payment of an amount for each set equal to the deposit indicated above, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract directly to the Authority will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
S. Sloan Colt, Chairman

New York, March 2, 1961

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5510) will be received at Hardin, Montana, until 10 a.m., Mountain Standard Time, March 30, 1961, for furnishing labor and materials for Administration Building, Garage and Fire Station, Laboratory, 12-car Garage, and Comfort Station for Yellowtail Community Facilities, Yellowtail Unit, Montana-Wyoming, Lower Big Horn Division, Missouri River Basin Project. Location 45 miles southwest of Hardin, Montana, in Big Horn County. Principal items are 1,130 cu. yd. excavation; Lump sums—Constructing administration building, garage and fire station, field laboratory, 12-car garage, comfort station; and other work. The work is divided into 5 schedules. Completion time 320 days. For particulars, address Bureau of Reclamation, Post Office Box E, Hardin, Montana; Post Office Box 2553, Billings, Montana; or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5516) will be received at Ellis, Kansas, until 10 a.m., Central Standard Time, March 29, 1961, for furnishing labor and materials for Earthwork and Structures, Cedar Bluff Canal, Station 211+44.6 to Station 569+00, Cedar Bluff Unit, Kansas, Missouri River Basin Project. Location near Ellis, Kansas. Principal items are 390,000 cu. yds. of excavation; 950 cu. yds. of concrete; 6,100 ft. of concrete pipe, 15- to 72-inch diameters; and other work. Completion time 400 days. For particulars, address Bureau of Reclamation, P. O. Box 525, Stockton, Kansas; Bldg. 46 Denver Federal Center, Denver 25, Colorado; or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5515) will be received at Huron, South Dakota, until 10 a.m., Central Standard Time, March 23, 1961, for furnishing labor and materials for Stage 04 additions to Sioux City Substation, Iowa, and additions to Grand Forks Substation, North Dakota, Missouri River Basin Project. Location near Hinton, Iowa, and Grand Forks, North Dakota. Principal items are Excavation, 17,600 cu. yds.; concrete, 1,115 cu. yd.; furnishing and erecting 320,000 lbs. substation steel structures; furnishing and erecting 115,000 lbs. transmission line approach towers; installing two 75,000-kva, 220-kv, 3-phase autotransformers; installing one 45,000-kva, 220-kv, 3-phase autotransformers; reinstalling one 75,000-kva, 220-kv, 3 phase power transformer; and other work. Completion time 430 days. For particulars, address Bureau of Reclamation, Post Office Box 2553, Billings, Montana; Post Office Box 825, Huron, South Dakota; or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Invitation No. DS-5521) will be received at Denver, Colorado, until 2 p.m., Mountain Standard Time, March 28, 1961, for furnishing one (1) 165-ton Gantry Crane for Clen Canyon Dam, Colorado River Storage Project, Arizona-Utah. Delivery is desired within 360 days. For particulars, address Bureau of Reclamation, Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5520) will be received at Paonia, Colorado, until 10 a.m., Mountain Standard Time, March 24, 1961, for furnishing labor and materials for Earthwork and Structures for Aspen Canal, Station 0+63.5 to Station 73+08.5, Smith Fork Project, Colorado. Location near Crawford, Colorado. Principal items are construction of a 54-inch pipe siphon 5,520 feet long with alternate bidding on concrete pressure pipe, pretensioned concrete pipe and mortar lined and coated steel pipe; 19,200 yds. excavation; 170 cu. yds. concrete; and other work. Completion time 500 days. For particulars, address Bureau of Reclamation, P. O. Box 346, Paonia, Colorado; P. O. Box 360, Salt Lake City, Utah; or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Invitation No. DS-5514) will be received at Denver, Colorado, until 2 p.m., Mountain Standard Time, March 28, 1961, for furnishing two (2) oil-pressure, cabinet-type, actuator governors, for regulating the speed of two 70,000 horsepower 200 rpm, vertical-shaft hydraulic turbines for Trinity Powerplant, Central Valley Project, California. Delivery is desired within 540 days. For particulars, address Bureau of Reclamation, Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

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• POSITIONS VACANT

Construction Supervision. Construction engineer for inspection and supervisory work on electric power lines and substations. Opportunity for permanent employment and advancement with well-known consulting engineering firm. Send resume to P-6005, Engineering News-Record.

Electrical Engineer familiar with electric power systems. Permanent employment with opportunity for advancement in long-established consulting engineering firm. Write or call Stanley Engineering Company, Muscatine, Iowa.

Senior Cost Engineer. Must be familiar with the Uniform System of Accounts for Electric Utilities. Duties will consist of analyzing completed major construction projects for an Electric Utility. Experience with the Federal Power Commission or a State Public Service Commission would be desirable. Some experience with the Property Record Department of any Electric Utility would also be an asset. Please send complete information on experience, references, salary requirements, and availability. Indianapolis Power & Light Co., 25 Monument Circle, Indianapolis 6, Indiana, Employment Division.

Graduate Engineer—Wanted as superintendent. Also assist in sales work and estimating. Permanent. The A. S. Johnson Company; 3311 Jennings Road; Cleveland 9, Ohio.

Engineer Wanted—Water Supply & Distribution-Graduate engineer experienced in design for well supply, water distribution systems, sewage treatment & sewage collection systems. Salary open. Location Long Island, N. Y. P-6108, Engineering News-Record.

Estimator—Capable and experienced estimator for work with medium sized general contractor. Minnesota location. P-6151, Engineering News-Record.

Civil Engineer with highway design experience. Send Resume, salary required to Louis Berger & Associates, 177 Oakwood Avenue, Orange, New Jersey.

Senior Water Supply Engineers with broad experience in design and/or supervision of construction of municipal water systems including treatment plants, pumping stations, distribution networks. Positions available New York City and overseas. Base salaries $11-14,000. For overseas positions salary differential and maintenance allowances to be added. Send complete resume and salary requirements to P-6119, Engineering News-Record.

Soils Engineer. Graduate Civil Engineer with field experience in foundation investigation, testing, and laboratory management. Will supervise field exploration and soils laboratory testing for highway construction. Required to analyze field information and test data to develop design criteria and recommend construction technique. Salary, to be negotiated depending on experience. Location, Intermountain West. P-6187, Engineering News-Record.

Paving Materials Salesman to cover North Jersey area. Road construction experience preferred. Salary open. P-6190, Engineering News-Record.

• POSITIONS VACANT

Asphalt Paving Foreman to work in North Jersey. Experience preferred, however, we will train right man. P-6191, Engineering News-Record.

Structural Engineer-Midwest consulting firm seeks Ph.D. to design complex steel structures, reinforced and prestressed concrete. Preference will be given to applicants with practical experience. Permanent position with established firm in business since 1929. Moving expenses paid. Send resume, including education, experience, and personal qualifications to P-6245, Engineering News-Record.

Wanted Master Mechanic to work in Eastern Pennsylvania. Must be able to repair all types of earth moving equipment. Good opportunity with reputable company. P-6252, Engineering News-Record.

City Engineer-The City of Monroe is accepting applications for the position of City Engineer. Education and experience requirements are: graduate civil engineer with general municipal experience, should be State of Wisconsin registered or eligible therefor within one year. Salary open. Write F. M. Bray, City Clerk, Box 200, Monroe, Wisconsin.

Estimator for structural steel fabricator. Require extensive experience detailing, designing, estimating and control of work in process. Rapidly expanding operations of small fabricator requires responsible individual, administratively and technically qualified to grow with company. Send complete resume. All replies held in confidence. General Steel Fabricators, Inc., P. O. Box 299, Schenectady, N. Y.

Engineer-to design and sell LP Gas Plants throughout the country for major engineering construction company in the Southeast. Must be willing to travel. Permanent position, good salary, excellent benefits. P-6228, Engineering News-Record.

Civil Engineer-Faculty position in an expanding collegiate engineering program to teach various civil engineering subjects. Require B.S. degree. Preference for experience, registration, and graduate study. Send resume to Dean of Engineering, California State Polytechnic College, Pomona, California.

Superintendent for Heavy Construction, culvert pipes, deep trenches. Please write: 115 South Haven St., Baltimore, Md. giving full resume or call Broadway 6-6920.

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Salesman Wanted-Sell the hottest piece of transistor equipment direct to the accounts you already call on. Two way Walkie Talkie, pocket size radio, weighs only 18 ounces, range up to 5 miles. Speeds communication in plant and factory. Priced right, big profit on every sale. Write to: Brian Sales Co., 161 West 16th Street, New York 11, N. Y.

• POSITIONS WANTED

Executive Female: 15 yrs exp all phases genrl const, efficient coordinator, administrator, mgr, atty, govt contracts, claims. PW-5887, Engineering News-Record.

Construction Superintendent Available immediately 30 years experience in all type of heavy construction. PW-6135, Engineering News-Record.

Purchasing—Heavy Construction. Wide experience material & equip. procurement, setting up procedures & office mgmt, missile base & other state & fed. work. PW-6158, Engineering News-Record.

• POSITIONS WANTED

Construction Superintendent—over 30 years experience all types road construction and paving. PW-6192, Engineering News-Record.

Construction Supt—Proj Mgr, Roads, Bldgs, Flood Control, Tunnels, excellent Mech background, P.O. Box 5765, Washington 14, D.C.

Senior Engineer and Inspector-Exceptional background in inspection, expediting and material control work on multi-million dollar projects-foreign and domestic. Inspections in over 500 major U. S. manufacturing plants utilizing up-to-date techniques including x-ray, magnetic particle and electronic devices. Available on contract or salary basis. Take complete charge material coordination, inspection and/or expediting or available for supervisory position on foreign construction projects. L. E. Parker, 666 No. Terrace Ave., Mount Vernon, New York.

Superintendent-20 years experience on sanitary and storm sewers. Capable of complete charge. Prefer Northeast. PW-6239, Engineering News-Record.

Foreman, excavating, grading, pipe drainage. PW-6224, Engineering News-Record.

Civil Engineer-Age 36-12 yrs experience-field eng'g & supervision thru estimating, negotiating, sales & administration-primarily for major foundation subcontractor. Desire position with future. Will relocate. Immed. available. PW-6249, Engineering News-Record.

Civil Engineer-12 years experience in consulting sanitary engineering field. Capable of assuming responsibility for design, plans, specifications and administration of water and sewage works projects. Desires responsible position in consulting or other field. PW-6232, Engineering News-Record.

Partnership or profit sharing arrangement sought with small N. East gnrl contr. desiring, young, aggressive, experienced Supt. to carry the ball. PW-6250, Engineering News-Record.

Superintendent-Estimator, Sewer and Water treatment. Fully qualified to handle projects from Bid preparation to completion. Prefer South or Southwest. Fifteen years experience with medium sized contractor. PW-6248, Engineering News-Record.

Project Manager-Project Engineer 36, married, civil engineer (French and Canadian registrations) 14 years experience in heavy construction in Europe, North Africa, North America (Dam, Subway, High-way, Airfield Dredging, Atomic energy) Desires position 4 or 5 years multi-million dollar project in heavy construction preferably in Mediterranean countries: West Pakistan or Mexico. PW-6253, Engineering News-Record.

Chief Hydraulic Engineer. 20 yrs. exp. complete charge all phases development, reports, design, constr. of water supply, hydroelectric, pumpback power, flood control & irrigation projects. Civil & Struct. Lic. PW-6244, Engineering News-Record.

M. S. C. E., 25, 2 yrs. experience R. C. design and construction. M.S. in construction. Engineer degree expected June. Some knowledge Operations Research, computers, business admin. Desires construction-planning, estimating, admin. or supervision job. Box 2392, Stanford Univ. Calif.

Bridge & Structural Engineer-thoroughly expd. in bridge and structural steel design, especial in long span bridges. Broad background, up to date in theory and practice. Resume on request. PW-6240, Engineering News-Record.

(Continued on the following page)

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Decatur, Alabama

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Highway Engineer
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ENR—T1/3

Editorials

Private Works Need Boosting

THE ADMINISTRATION HAS MOVED with its promised vigor to speed up what can be rushed of federal or federal-aided public works (ENR Feb. 23, p. 19). But it is a speedup in private construction that will do most to help the ailing economy.

President Kennedy has ordered $724 million made available for highways immediately, instead of April 1, as scheduled. The U.S. Bureau of Reclamation has ordered an overtime schedule to bring plans and specs into readiness for earlier contract awards. Some $350 million has been ordered applied to authorized hospital and sewage works projects and to schools in the so-called federally impacted areas. About $500 million in construction money has been earmarked for early spending by the Defense Department. Also, to stimulate housing, the interest rate on FHA-insured mortgages has been ordered down a quarter of a point, from 5¾ to 5½%; and the Federal Home Loan Board is to expand the lending power of some 4,600 savings and loan associations.

Next will come serious consideration of how to stimulate industrial plant construction. New incentives are promised by the Administration. Herein may lie the real challenge for construction to lead the nation from its recession. Get industrial building moving, then watch construction lift the economy.

Incorporation: Chronic Problem

WITH LEGISLATURES IN SESSION in many states, it is inevitable that bills relating to the practice of engineering by corporations will be placed in some of the hoppers. If incorporation is now permitted, the intent of the bills usually will be to liberalize the rules. If the practice of engineering by corporations is now prohibited, the bills will seek to make it permissive. In either case, engineers have a responsibility to be informed of the proposed changes and to take a stand in accordance with their professional beliefs.

In the states where corporate practice is permitted, there are usually restrictions on this form of business structure to protect the public against incompetent or irresponsible operation. The pressure on the legislatures in these states comes from those who believe that some of these restrictions should be relaxed or removed.

In the few states where corporate practice is outlawed —except for those corporations in existence when the restrictive legislation was originally passed—the pressure for change comes from two sources. Most insistent is that from firms incorporated outside the state who want to do business in the state.

But growing in importance is the pressure from individuals and partnerships who see advantages in the corporate form of business organization. These advantages include the privilege of being taxed as a corporation instead of as individuals; the opportunity to create pension and profit-sharing plans; the opportunity to set up deferred compensation plans for principals as employees, or to establish stock option and stock bonus plans; an improved chance to attract capital to finance the business; and perhaps more practicable procedures for assuring the continuity of the firm.

Until recently those of the national engineering societies that took an interest in the subject opposed incorporation as being incompatible with professionalism. This extreme viewpoint has changed, however.

Since so many states permit corporate practice, the principal interested societies now favor a uniform law for all states to permit corporations to engage in the practice of engineering under certain restrictions. Broadly these are that the majority of the officers and directors be registered engineers, and that all individuals in responsible charge of the practice of engineering be registered professional engineers in the state where a particular job is being carried out. A further restriction requiring that the majority of the shares of such corporations be owned by registered professional engineers has been proposed but does not have unanimous support at the present time.

Such a uniform, nationwide law, which is also being considered by accountants and lawyers, according to reports, will, no doubt, be difficult to establish because of the wide variety of existing state laws, some of which are less restrictive than the proposed one. Nevertheless, the uniform-law proposal provides a useful basis for analyzing proposals for state laws or their revisions.

In the meantime, on a national scale, consideration might be given to a change in the federal tax laws to give individuals and partnerships the same business advantages now possessed by corporations. Were that the case there would at least be less incentive for new engineering corporations than there is at present.

A House Is Not a Home

A MADISON AVENUE MOGUL has discovered the trouble with the housing market. His thesis: Houses satisfy too many families for too long a time; the industry must help homebuyers learn the virtue of trading up to a bigger, better, more beautiful house every few years. Take a tip, says he, from the auto industry. Find housing's equivalent of a pinch of chromium and a dash of tailfin and you'd have to beat off the buyers with clubs.

The idea has interesting possibilities. It would, for example, relieve the industry of the troublesome responsibility of building houses to last a lifetime, for who would want to live in the same old house for a lifetime? And it should be a simple matter for clever merchandisers to convince those who worry about keeping up with the mortgage payments that it's much more important to keep up with the Joneses.

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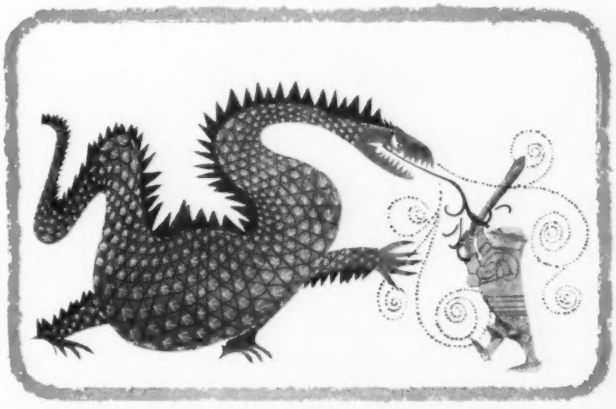

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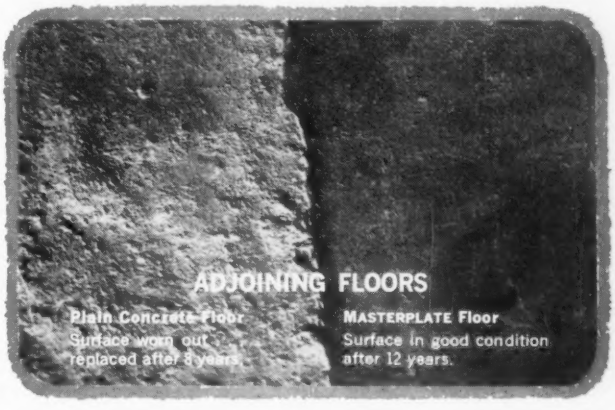
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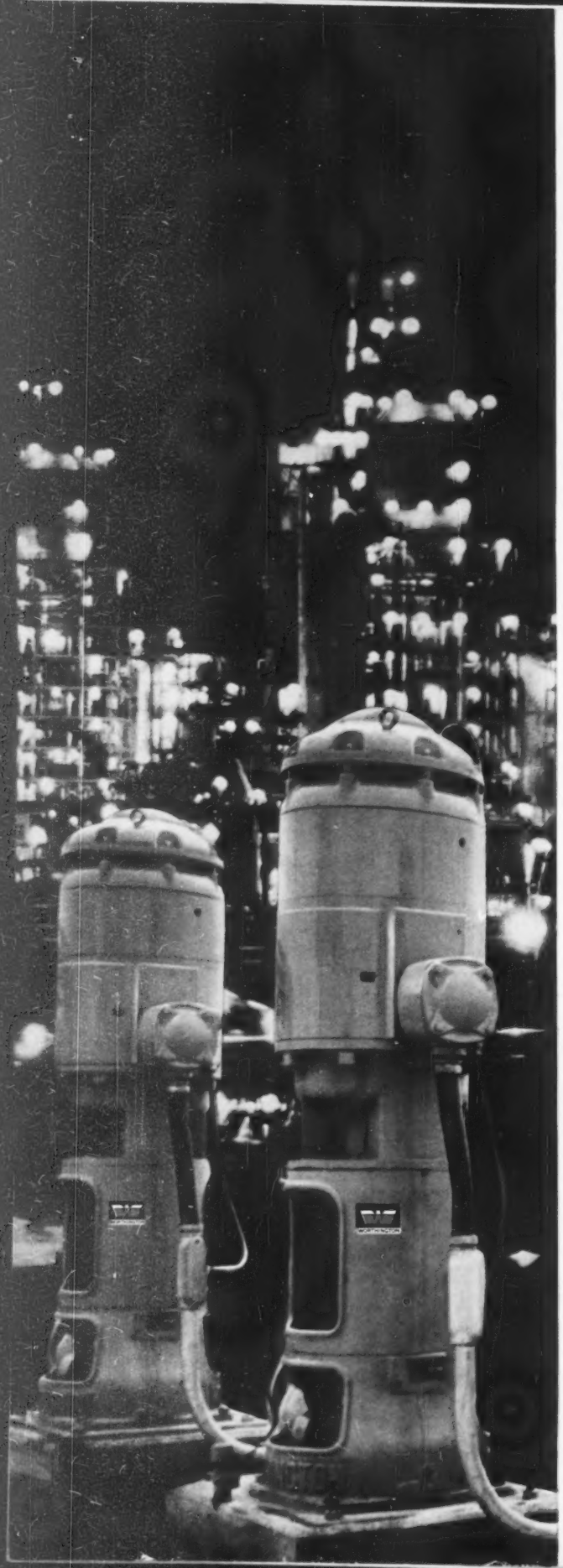

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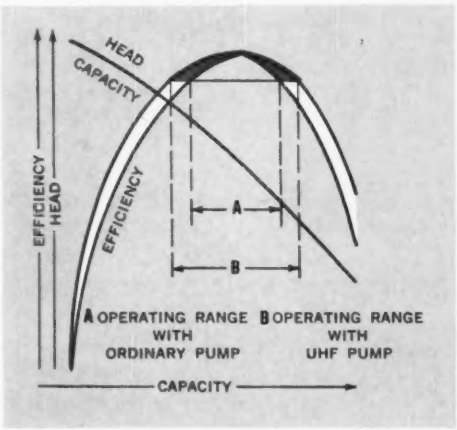

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